

A330310

Energy Engineering Analysis Program (LEAP)
Limited Energy Study - LIGHTING
Fort Campbell, Kentucky

Final Report

Volume 1

Sections 1-5

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SYSTEMS*corp*

SYSTEMS ENGINEERING AND MANAGEMENT CORPORATION

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1 EXECUTIVE SUMMARY

TYPE EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

1.1 SYNOPSIS

Systems Corp surveyed and completed energy analyses for 95 representative buildings at Fort Campbell, categorized as Korean War Barracks, Airfield Buildings, and Blanchfield Hospital buildings B and C. The energy conservation opportunities (ECOs) evaluated were high efficiency interior and exterior lighting, and indoor lighting controls. Cost estimates were prepared using MeansData for Windows Spreadsheets, Version 2.0a. Life cycle cost analyses were performed using the Life Cycle Cost in Design (LCCID) computer program. Project development brochures (PDBs) and DD1391 forms were prepared for four Energy Conservation Investment Program (ECIP) projects. The total of the four projects that were developed represent \$385,283 in annual savings with a simple payback of 6.37 years and a saving to investment ratio (SIR) of 1.89.

1.2 INTRODUCTION

Systems Engineering and Management Corporation (Systems Corp) was contracted by the Louisville District of the United States Army Corps of Engineers in June 1994 to perform a limited energy study for 95 buildings at Fort Campbell, Kentucky. The project includes a study of interior and exterior lighting, as well as controls.

1.2.1 Scope of Work

1. Evaluate selected energy conservation opportunities (ECOs) to determine their energy savings potential and economic feasibility.
2. Conduct a limited site survey of selected buildings or areas to insure that any methods of energy conservation which are practical and have not been evaluated in any previous energy study have been considered and the results documented.
3. Determine efficiency of existing systems. Determine the replacement option with the highest SIR.
4. Provide complete programming or implementation documentation for all recommended ECOs.
5. Prepare a comprehensive report to document the work performed, the results, and the recommendations.

1 EXECUTIVE SUMMARY

FY94 EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

1.2.2 Organization of the Final Report

The submitted material for this report consists of the following:

Volume I: Executive Summary, Methods and Approach, Project I: Interior/Exterior Lighting at Airfield, Project II: Lighting Controls at Airfield, Project III: Interior Lighting and Controls at Blanchfield Hospital, Project IV: Interior Lighting at Korean War Barracks

Volume II: Scope of Work, Interim Review Comments and Responses, and Interim Review Presentation

1.3 PRESENT AND HISTORICAL ELECTRICAL ENERGY CONSUMPTION

The baseline energy consumptions and the energy conservation opportunity energy consumption were determined using spreadsheets and manual calculating to model system energy consumption. These have been included in Section 2 of this report.

The electric energy consumption, demand, and total costs for FY93 are shown in Table 1.3.1 Fort Campbell Electric. Figure 1.3.1 is a bar graph of the monthly consumption and cost for FY93. The electric costs used to calculate the electric cost savings for the project are as follows:

COST/kWh	= \$0.02114/kWh (No Demand)
COST/MBtu	= \$6.18/MBtu (No Demand)
COST/kW	= \$11.78/kW (Monthly Demand)

1.4 ENERGY CONSERVATION OPPORTUNITIES INVESTIGATED

Systems Corp analyzed two energy conservation opportunities (ECOs) at Fort Campbell, Kentucky. The analysis was performed utilizing energy models developed by Systems Corp and data collected during the field survey of the facilities at Fort Campbell. Each ECO was evaluated to determine the potential energy savings, dollar savings, implementation costs, simple payback, life cycle cost, and savings to investment ratio (SIR). The two ECOs that were evaluated are as follows:

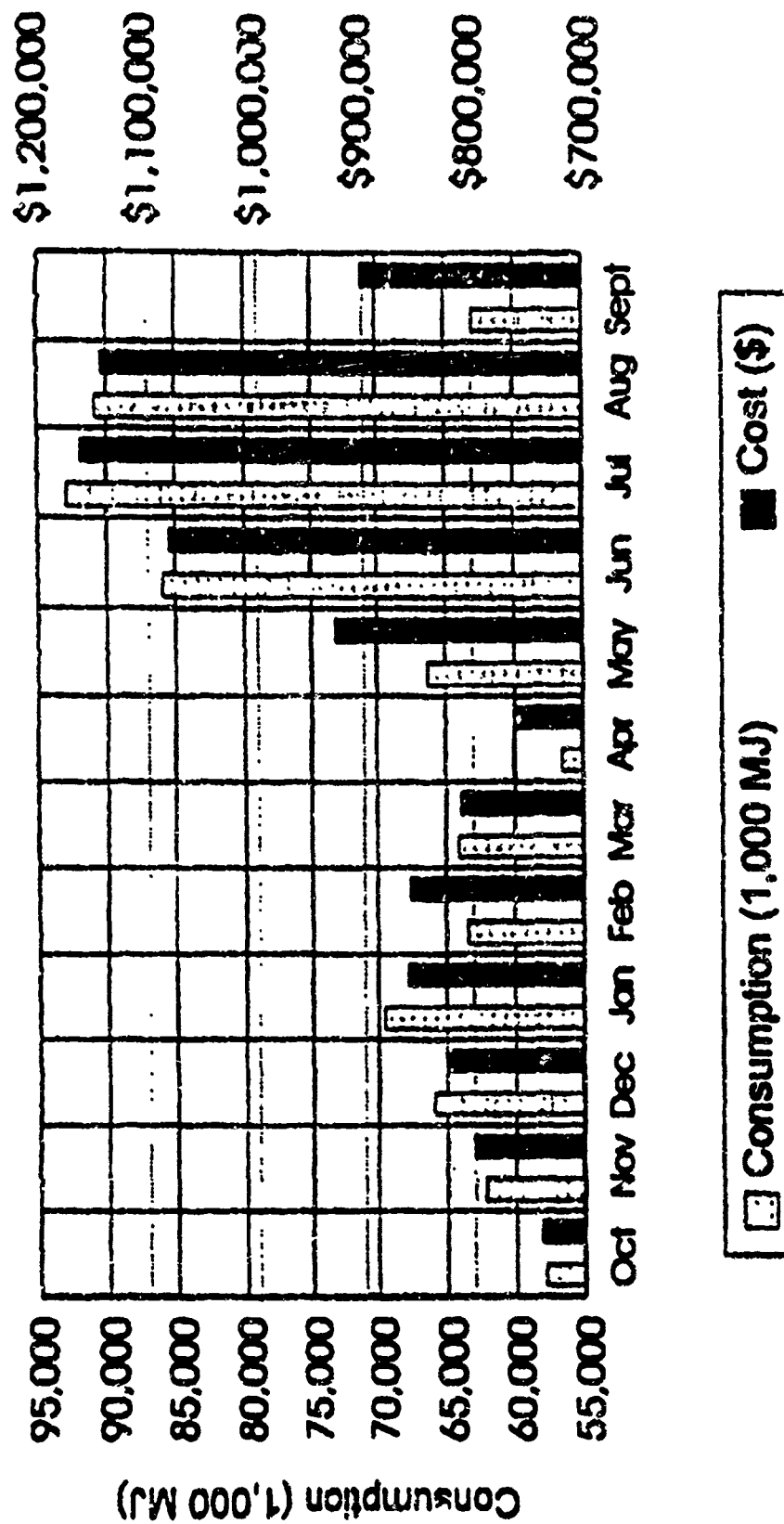
ECO - 1 High Efficiency Interior/Exterior Lighting

ECO - 2 Lighting Controls

Table 1.3.1
Fort Campbell Electric
FY93

Month	Demand (KW)	Consumption (KWH)	Total Cost	Cost/KWH
Oct '92	31,072	16,077,600	\$739,346	\$0.046
Nov	34,020	17,267,200	\$800,606	\$0.046
Dec	33,907	18,320,400	\$821,704	\$0.045
Jan '93	35,361	19,307,400	\$860,667	\$0.045
Feb	36,140	17,644,200	\$857,977	\$0.049
Mar	33,944	17,908,000	\$811,111	\$0.045
Apr	34,663	16,601,200	\$780,262	\$0.048
May	43,697	18,429,600	\$926,917	\$0.050
Jun	47,212	23,572,800	\$1,061,048	\$0.045
Jul	50,006	25,800,600	\$1,160,394	\$0.045
Aug	49,566	25,229,400	\$1,141,714	\$0.045
Sep	43,261	17,486,800	\$802,293	\$0.052
TOTAL	474,862	232,957,200	\$10,864,239	\$0.047
Min	31,072	16,077,200	\$739,346	\$0.045
Max	50,006	25,800,600	\$1,160,394	\$0.052
Avg	39,574	19,413,100	\$805,353	\$0.047

Figure 1.3.1
Fort Campbell Electric
FY93



1 EXECUTIVE SUMMARY

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Systems Corp's energy analysis models were used to determine the savings achieved for implementing each ECO in the facilities that were evaluated. Means Data for Windows Spreadsheets, Version 2.0a cost estimating software was used to estimate the implementation cost of each ECO in each facility evaluated. The U.S. Army Corps of Engineers' Life Cycle Cost in Design, Version 1.0, Level 80, software was used to perform life cycle cost analyses and determine the SIR of each ECO for each facility evaluated.

1.4.1 ECOs Recommended

Systems Corp recommended that both of the ECOs evaluated be implemented, but not in every area surveyed. The following is a list of the ECOs recommended to be implemented by area surveyed. The criteria for recommendation is a favorable simple pay back and savings to investment ratio (SIR).

ECO - 1: Airfield Buildings
Blanchfield Hospital
Korean War Barracks

ECO - 2: Airfield Buildings
Blanchfield Hospital

1.4.2 ECOs Rejected

ECO-2, Lighting Controls, in the Korean War Barracks was rejected due to the large investment required for the proper controls set-up. The best opportunity for lighting controls was in the latrine areas. Due to multiple walls and sections, multiple overhead occupancy sensors would be required. Good energy savings were available, but the high investment costs gave the project a poor simple payback and SIR.

1.4.3 ECIP Projects Developed

Systems Corp developed four ECIP/FEMP projects. The projects included interior/exterior lighting in 28 buildings at the Airfield, lighting controls in 15 buildings at the Airfield, interior lighting and controls at Blanchfield Hospital, and interior lighting at 44 Korean War Barracks. The following table summarizes the savings and investments for each project.

TABLE 1.4.3
FORT CAMPBELL LIGHTING ENERGY STUDY
ECIP PROJECT SUMMARY

PROJECT NUMBER	DESCRIPTION	1ST YEAR SAVINGS	TOTAL INVESTMENT	SPB (YRS)	SIR
1	INTERIOR LIGHTING AT AIRFIELD (ECO 1)	\$130,855	\$709,900	5.43	2.21
2	LIGHTING CONTROLS AT AIRFIELD (ECO 2)	\$26,208	\$60,078	2.29	5.21
3	INTERIOR LIGHTING AND LIGHTING CONTROLS AT HOSPITAL (ECO 1 & 2)	\$79,518	\$424,003	5.33	2.27
4	INTERIOR LIGHTING AT KOREAN WAR BARRACKS (ECO 1)	\$148,900	\$1,260,715	8.47	1.43
PROJECT TOTALS		\$385,283	\$2,454,696	6.37	1.89

2 METHODS AND APPROACH

FY94 LEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

2.1 FIELD SURVEY

The field survey as performed by Systems Corp was designed to provide the necessary data required to complete the Scope of Work for this project. It was also designed to provide residual benefits to the installation by providing an organized and readily available source of information which can be used in future years. The information was transmitted in the form of field notes using standardized survey forms.

The survey forms were designed to allow notations of all data which could be utilized (not necessarily required) to calculate the energy savings gained by implementing a specific energy conservation opportunity. These forms contain data obtained from as-built drawings and confirmed in the field, as well as data obtained only in the field. Table 2.1.1 lists the buildings surveyed, sorted by type.

2.1.1 Interior/Exterior Lighting

Thorough preparation for the building survey ensures that the data required to perform the technical analysis is obtained. The building surveys were performed in a manner which assured the best results. A simple listing of each step of the process best describes our approach to the surveys.

1. The list of ECOs included in the work scope were reviewed in detail.
2. Each ECO was given an identification number which is used consistently throughout the project.
3. An expanded description of each ECO was formulated to outline the possible methods for implementation of the ECO.
4. Survey forms were developed for each ECO to provide space to enter any data which might possibly be used in performing the engineering and economic analysis of the ECO.
5. A list of the types of as-built drawings required for the buildings was prepared based on the information required on the ECO survey forms.
6. The building surveys are then performed, confirming or revising data obtained from the drawings. Additional data is obtained as required.

Note: A Systems Corp representative assisted during the survey in gathering the necessary as-built drawings. Due to the age of drawings, most of the required information was gathered during the survey, while physically present at the buildings.

Systems Corp survey teams met with the post Energy Officer throughout the survey on an as-needed basis.

TABLE 2.1.1
BUILDINGS SURVEYED

BUILDING TYPE	BUILDING NUMBER	BUILDING AREA (SQ FT)
HOSPITAL	650	227,735
TOTAL AREA THIS TYPE		227,735
BARRACKS		
	3211	39,722
	3212	39,722
	3213	42,627
	3214	42,627
	3215	39,809
	3216	39,809
	3217	39,722
	3218	39,722
	6709	38,145
	6710	38,408
	6711	38,329
	6712	38,585
	6718	31,869
	6719	31,779
	6725	38,241
	6726	38,160
	6727	38,312
	6728	38,285
	6730	38,138
	6731	38,208
	6732	38,442
	6733	37,977
	6909	31,758
	6910	38,089
	6911	38,280
	6912	38,310
	6917	38,480
	6918	38,843
	6919	38,711
	6920	38,849
	6921	38,512
	6922	38,891
	6923	38,465
	6927	38,118
	6928	38,120

**TABLE 2.1.1
BUILDINGS SURVEYED**

BUILDING TYPE	BUILDING NUMBER	BUILDING AREA (SQ FT)
BARRACKS (CONT)	6929	38,281
	6930	38,196
	6931	31,713
	6936	31,735
	6937	37,900
	6938	38,039
	6939	38,137
	6940	38,127
	6942	38,098
	6943	38,048
	6944	38,063
	6945	31,885
	7110	23,828
	7112	25,825
	7118	25,825
	7120	25,825
	TOTAL AREA THIS TYPE	1,877,991
AIRFIELD SUPPORT FACILITIES	7109	192
	7141	192
	7150	8237
	7155	4518
	7157	8649
	7158	100
	7159	4259
	7162	1258
	7164	3108
	7165	954
	7170	8400
	7178	3230
	7179	8300
	7187	1734
	7212	1849
	7267	29744
	TOTAL AREA THIS TYPE	83,719

TABLE 2.1.1
BUILDINGS SURVEYED

BUILDING TYPE	BUILDING NUMBER	BUILDING AREA (SQ FT)
HANGAR	7152	20511
	7154	36677
	7158	34785
	7206	24178
	7208	41912
	7210	32611
	7214	41870
	7218	41800
	7243	41117
	7245	49139
	7249	49139
	7161	11218
	7262	59243
	7264	60000
	7268	60400
	7272	40548
	TOTAL AREA THIS TYPE	683,198
DINING FACILITIES	7114	7173
	TOTAL AREA THIS TYPE	7,173
ADMINISTRATIVE	7131	15404
	7133	15404
	7145	2581
	7163	11756
	TOTAL AREA THIS TYPE	43,145

TABLE 2.1.1
BUILDINGS SURVEYED

BUILDING TYPE	BUILDING NUMBER	BUILDING AREA (SQ FT)
STORAGE	7134	17950
	7177	5512
	7281	12500
	TOTAL AREA THIS TYPE	35,962
MEDICAL CLINIC	7149	9248
	TOTAL AREA THIS TYPE	9,248
FIRE STATION	7180	12516
	TOTAL AREA THIS TYPE	12,516
TOTAL AREA SURVEYED		2,954,687

2 METHODS AND APPROACH

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2.1.2 Lighting Controls

The lighting controls survey was performed in much the same way as the interior/exterior lighting survey. The same buildings were surveyed. The following is a listing of the additional steps required for the lighting controls survey.

1. The current method of control was identified through as-built drawings and field survey.
2. Systems Corp representatives met with Blanchfield Hospital EMCS operators to discuss the current lighting control scheme at the hospital.
3. Building surveys were performed to identify opportunities for energy saving controls.
4. Systems Corp met with the post Energy Officer throughout the survey on an as-needed basis.

2.2 CALCULATIONS

Energy calculations were performed using computerized techniques. Due to the large volume of calculations to be performed, standardized procedures were developed for the computer models. This assured consistent results and uniformity of quality in all of the calculations performed.

2.2.1 Baseline Energy Consumption

The following sections will describe the method for calculating the baseline energy consumption for each of the two ECOs.

2.2.1.1 Baseline Energy Consumption: ECO-1

The baseline energy consumption for this ECO was calculated using a LOTUS123 spreadsheet. This spreadsheet modeled the energy consumption of the existing lighting systems by utilizing the following:

1. Existing fixture and lamp type (i.e., fluorescent, mercury vapor, etc.)
2. Lamp wattage
3. Ballast wattage
4. Hours of use

The above information was obtained during the field survey. Table 2.2.1.1 lists the baseline energy consumption for the buildings surveyed for ECO-1.

TABLE 2.2.1.1.1
BASELINE ENERGY CONSUMPTION
ECO-1

ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY CONSUMPTION (MJ)
1	650	6,968,645
1	3211	461,732
1	3212	702,374
1	3213	489,861
1	3214	519,383
1	3215	1,021,811
1	3216	1,063,988
1	3217	593,772
1	3218	792,697
1	6709	525,223
1	6710	644,965
1	6711	321,530
1	6712	449,422
1	6718	267,404
1	6719	327,441
1	6725	297,891
1	6726	295,772
1	6727	373,547
1	6728	442,693
1	6730	438,562
1	6731	494,042
1	6732	483,056
1	6733	471,603
1	6909	418,778
1	6910	275,939
1	6911	525,156
1	6912	420,325
1	6917	599,011
1	6918	554,236
1	6919	634,674
1	6920	528,344
1	6921	448,765
1	6922	379,576
1	6923	555,798
1	6927	618,515

TABLE 2.2.1.1.1
BASELINE ENERGY CONSUMPTION
ECO-1

ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY CONSUMPTION (MJ)
1	6928	551,605
1	6929	471,640
1	6930	659,472
1	6931	417,944
1	6936	381,338
1	6937	534,601
1	6938	600,981
1	6939	489,744
1	6940	549,808
1	6942	255,371
1	6943	537,138
1	6944	547,375
1	6945	450,202
1	7109	77,906
1	7110	23,173
1	7112	12,614
1	7116	35,606
1	7118	10,853
1	7120	9,280
1	7131	230,669
1	7133	169,379
1	7134	215,759
1	7141	30,989
1	7145	14,108
1	7149	148,962
1	7150	163,309
1	7152	77,248
1	7154	127,034
1	7155	42,221
1	7156	168,937
1	7157	76,286
1	7158	2,642
1	7159	59,065
1	7160	208,884
1	7163	174,858

TABLE 2.2.1.1.1
BASELINE ENERGY CONSUMPTION
ECO-1

ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY CONSUMPTION (MJ)
1	7164	110,477
1	7165	34,532
1	7170	162,509
1	7176	112,867
1	7177	3,145
1	7179	95,466
1	7187	11,831
1	7206	617,305
1	7208	1,259,069
1	7210	881,474
1	7212	85,973
1	7214	1,680,339
1	7218	1,774,513
1	7243	1,810,377
1	7245	1,400,367
1	7249	1,400,367
1	7262	260,195
1	7264	169,048
1	7267	95,092
1	7268	234,593
1	7272	179,431
1	7281	196,374

2 METHODS AND APPROACH

1994 EAP for Fort Campbell, KY

2.2.1.2 Baseline Energy Consumption: ECO-2

The baseline energy consumption for this ECO was also calculated using a LOTUS123 spreadsheet. The energy consumption was modeled using field measurements and local climatological data at Fort Campbell. The baseline was calculated after implementation of any proposed retrofits under ECO-1. The purpose of this was not to eliminate over estimating the savings. The information necessary to calculate the baseline include the following:

1. Existing lighting systems-type and wattage (and corresponding information on replacement system, if applicable)
2. Hours of use

The above information was obtained during the field survey. *Table 2.2 1.2.1* lists the baseline energy consumption for the buildings included in ECO-2.

2.2.2 ECO Energy Consumption

The following sections describe how the energy consumption (or energy savings) for each of the two ECOs was calculated.

2.2.2.1 ECO Energy Consumption: ECO-1

The energy consumption for this ECO was calculated in the same manner as the baseline for ECO-1. New lamp wattages, number of lamps, and ballast wattages were substituted for the existing lighting systems. For a detailed description of replacement fixtures, please refer to *Section 3-6*.

2.2.2.2 ECO Energy Consumption: ECO-2

The energy consumption for this ECO was calculated in the same manner as the baseline for ECO-2. Two control options were evaluated under this ECO: occupancy sensors and daylight sensors. The daylight sensors utilize on/off photocells to limit the use of artificial lighting when daylighting is providing the necessary light levels. The required hours to operate the lighting systems to maintain the recommended light levels were determined from the local climatological data for the Fort Campbell area. This data includes hours of heavy fog, thunderstorms, and cloudy skies during daytime hours. Revised hours of operation were substituted for the existing hours used for the baseline.

TABLE 2.2.1.2.1
BASELINE ENERGY CONSUMPTION
ECO-2

ECO NUMBER	BUILDING NUMBER	BASELINE ENERGY CONSUMPTION (MJ)
2	650	401,562
2	7152	82,128
2	7154	82,128
2	7158	92,394
2	7160	18,450
2	7206	179,856
2	7208	413,338
2	7210	150,696
2	7214	578,673
2	7218	578,673
2	7243	361,670
2	7245	210,974
2	7249	210,974
2	7262	727,834
2	7264	667,181
2	7268	363,917
2	7272	272,938

2 METHODS AND APPROACH

TYPE II AP LIGHTING ENERGY STUDY, Ft. CAMPBELL, KY

2.3 ENERGY CONSERVATION OPPORTUNITIES

The energy consumption for each of the energy conservation opportunities was prepared after the successful run of the baseline calculations. Calculation of the ECOs requires preparing a conceptual design which would allow implementation of the ECO. It is important to note that an ECO may be implemented in several ways. The designer must carefully consider the options to ensure the chosen design is the most likely to result in a savings that can justify the investment. After completing the conceptual design, the energy results were calculated by computer spreadsheets. The calculations were then reviewed for accuracy and technical feasibility. When problems were discovered, the calculations were revised and corrected.

After completing the energy calculations for each ECO, the cost estimates and economic analysis were prepared. A standardized bill of materials was prepared for each building within each ECO. Material sizes, quantities, and prices were prepared to represent specific conditions of the ECO. Annual and non-annual recurring costs are an important part of the life cycle cost for a given project. Each ECO was evaluated individually to determine the correct difference in these costs between the current condition and the future condition.

The following is a description for each ECO of how the calculations were performed in terms of the energy-efficient replacement products used.

2.3.1 ECO-1: High Efficiency Interior/Exterior Lighting

Many options were available which would fulfill this ECO. The goal was to increase the lighting efficiency of the interior and exterior lighting as much as possible while still being cost effective.

The following is a list and description of the options implemented. All options are not evaluated in all buildings due to applicability.

1. Two Foot, Four Foot, Eight Foot Fluorescent Fixtures: Replaced existing T12 lamps with T8 lamps and electronic ballasts. Reflectors were used in some fixtures to reduce the required number of lamps. Please refer to Sections 3 through 6 for a detailed description of reflector use. Reflectors were used only in four foot fixtures. There was a one-for-one fixture replacement.
2. Incandescent Lighting: Incandescents with wattages less than 200 watts were replaced with compact fluorescents. Incandescents in office areas with wattages greater than or equal to 200 watts were replaced with a two lamp, four foot, T8 fixture. There was not a one-for-one replacement for these high wattage lamps. Incandescents in shop bays, 300 watts or greater, were replaced with high pressure sodium fixtures.

2 METHODS AND APPROACH

FY94 EEAP LIGHTING ENERGY STUDY, Ft. CAMPBELL, KY

3. **Exit Signs:** Existing incandescent and fluorescent exit signs were replaced with LED exit signs, either through retrofit or complete sign replacement, except in the hospital where no retrofit was performed due to the type of the existing sign.
4. **Mercury Vapor Fixtures:** Existing mercury vapor fixtures were replaced with metal halide or high pressure sodium fixtures. Metal halide fixtures were used at all hangar facilities. Exterior mercury vapor fixtures were replaced with high pressure sodium fixtures. There was a one-for-one fixture and lumen replacement.

Please refer to Section 3 through 6 for a detailed description of replacements utilized in each facility.

In reference to option 1 above, the decision on whether or not to use reflectors and to delamp was based on light level readings taken during the field survey and on room cavity calculations. Most areas in the barracks were significantly underlit. In these areas, fixtures with an equal number of lamps were used as replacements. Most areas in Blanchfield Hospital and in administrative facilities at the Airfield had adequate or slightly high light levels. In these areas, reflectors were used and the number of lamps reduced. Form 2.3.1.1 shows example room cavity calculations to demonstrate existing foot candles and replacement foot candles.

In addition to savings calculated for lighting retrofits, air conditioning savings were calculated at Blanchfield Hospital. Since the hospital has year round cooling requirements, reducing the lighting load also reduces the air conditioning load. A Coefficient of Performance (COP) of 3.0 for the cooling equipment was assumed. This value was used along with the reduced lighting wattage to calculate the air conditioning savings.

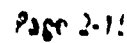
2.3.2 ECO-2: Lighting Controls

Two types of controls were evaluated under this ECO: daylight sensors and occupancy sensors. For daylight sensors, the objective was to reduce the hours required for operating the lighting systems while maintaining required light levels. The use of these sensors was evaluated in hangar bays at the Airfield which receive significant daylighting through highbay doors for at least six months throughout the year. The daylight sensors work through on/off photocell control. Based on the light readings obtained during the field survey, a quantity of fixtures were identified that could be controlled by photocells. If a photocell indicates that the recommended light level is being achieved by the use of daylight, the light fixtures controlled by the photocell will turn off automatically. The sensor has a footcandle range of 50 to 300 footcandles, which is adjustable. The sensor will be set by the user at the desired footcandle reading. When the light level reaches the set footcandle level (due to daylight) and remains there for 15 minutes, the fixtures controlled by that sensor will turn off automatically. When the light level decreases to approximately 15% less than this setting and remains there for 15 minutes, the fixtures will be turned on. The time delay is built in to prevent

FORM 2.3.1.1

SIMPLIFIED LIGHTING DESIGN CALCULATION											
2 X 4 RECESSED, FLUORESCENT FIXTURES: 1-12, 34 W LAMP MAGNETIC BALLAST											
Lumens Output Per Luminaire		Input Wattage Per Luminaire		Maintenance Factor		Light Loss Factor LLF 0.75		Coefficient of Utilization CU 0.67		Room Surface reflectance: 80 50 20	
1-Lamp	2-Lamp	3-Lamp	4-Lamp	1-Lamp	2-Lamp	3-Lamp	4-Lamp	1-Lamp	2-Lamp	3-Lamp	4-Lamp
2332	4664	6996	9328	41	82	123	164	0.85	0.64	0.43	0.34
48	64	96	128	24	18	12	8	49	37	29	20
64	96	128	160	18	12	8	7	37	24	18	14
96	128	160	192	12	8	7	7	24	14	14	14
128	160	192	224	8	7	7	7	18	14	14	14
160	192	224	256	7	7	7	7	14	14	14	14
192	224	256	288	7	7	7	7	14	14	14	14
224	256	288	320	7	7	7	7	14	14	14	14
256	288	320	352	7	7	7	7	14	14	14	14
288	320	352	384	7	7	7	7	14	14	14	14
320	352	384	416	7	7	7	7	14	14	14	14
352	384	416	448	7	7	7	7	14	14	14	14
384	416	448	480	7	7	7	7	14	14	14	14
416	448	480	512	7	7	7	7	14	14	14	14
448	480	512	544	7	7	7	7	14	14	14	14
480	512	544	576	7	7	7	7	14	14	14	14
512	544	576	608	7	7	7	7	14	14	14	14
544	576	608	640	7	7	7	7	14	14	14	14
576	608	640	672	7	7	7	7	14	14	14	14
608	640	672	704	7	7	7	7	14	14	14	14
640	672	704	736	7	7	7	7	14	14	14	14
672	704	736	768	7	7	7	7	14	14	14	14
704	736	768	792	7	7	7	7	14	14	14	14
736	768	792	816	7	7	7	7	14	14	14	14
768	792	816	840	7	7	7	7	14	14	14	14
792	816	840	864	7	7	7	7	14	14	14	14
816	840	864	888	7	7	7	7	14	14	14	14
840	864	888	912	7	7	7	7	14	14	14	14
864	888	912	936	7	7	7	7	14	14	14	14
888	912	936	960	7	7	7	7	14	14	14	14
912	936	960	984	7	7	7	7	14	14	14	14
936	960	984	1008	7	7	7	7	14	14	14	14
960	984	1008	1024	7	7	7	7	14	14	14	14
984	1008	1024	1040	7	7	7	7	14	14	14	14
1008	1024	1040	1056	7	7	7	7	14	14	14	14
1024	1040	1056	1072	7	7	7	7	14	14	14	14
1040	1056	1072	1088	7	7	7	7	14	14	14	14
1056	1072	1088	1104	7	7	7	7	14	14	14	14
1072	1088	1104	1120	7	7	7	7	14	14	14	14
1088	1104	1120	1136	7	7	7	7	14	14	14	14
1104	1120	1136	1152	7	7	7	7	14	14	14	14
1120	1136	1152	1168	7	7	7	7	14	14	14	14
1136	1152	1168	1184	7	7	7	7	14	14	14	14
1152	1168	1184	1192	7	7	7	7	14	14	14	14
1168	1184	1192	1200	7	7	7	7	14	14	14	14
1184	1192	1200	1208	7	7	7	7	14	14	14	14
1192	1200	1208	1216	7	7	7	7	14	14	14	14
1200	1208	1216	1224	7	7	7	7	14	14	14	14
1208	1216	1224	1232	7	7	7	7	14	14	14	14
1216	1224	1232	1240	7	7	7	7	14	14	14	14
1224	1232	1240	1248	7	7	7	7	14	14	14	14
1232	1240	1248	1256	7	7	7	7	14	14	14	14
1240	1248	1256	1264	7	7	7	7	14	14	14	14
1248	1256	1264	1272	7	7	7	7	14	14	14	14
1256	1264	1272	1280	7	7	7	7	14	14	14	14
1264	1272	1280	1288	7	7	7	7	14	14	14	14
1272	1280	1288	1296	7	7	7	7	14	14	14	14
1280	1288	1296	1304	7	7	7	7	14	14	14	14
1288	1296	1304	1312	7	7	7	7	14	14	14	14
1296	1304	1312	1320	7	7	7	7	14	14	14	14
1304	1312	1320	1328	7	7	7	7	14	14	14	14
1312	1320	1328	1336	7	7	7	7	14	14	14	14
1320	1328	1336	1344	7	7	7	7	14	14	14	14
1328	1336	1344	1352	7	7	7	7	14	14	14	14
1336	1344	1352	1360	7	7	7	7	14	14	14	14
1344	1352	1360	1368	7	7	7	7	14	14	14	14
1352	1360	1368	1376	7	7	7	7	14	14	14	14
1360	1368	1376	1384	7	7	7	7	14	14	14	14
1368	1376	1384	1392	7	7	7	7	14	14	14	14
1376	1384	1392	1400	7	7	7	7	14	14	14	14
1384	1392	1400	1408	7	7	7	7	14	14	14	14
1392	1400	1408	1416	7	7	7	7	14	14	14	14
1400	1408	1416	1424	7	7	7	7	14	14	14	14
1408	1416	1424	1432	7	7	7	7	14	14	14	14
1416	1424	1432	1440	7	7	7	7	14	14	14	14
1424	1432	1440	1448	7	7	7	7	14	14	14	14
1432	1440	1448	1456	7	7	7	7	14	14	14	14
1440	1448	1456	1464	7	7	7	7	14	14	14	14
1448	1456	1464	1472	7	7	7	7	14	14	14	14
1456	1464	1472	1480	7	7	7	7	14	14	14	14
1464	1472	1480	1488	7	7	7	7	14	14	14	14
1472	1480	1488	1496	7	7	7	7	14	14	14	14
1480	1488	1496	1504	7	7	7	7	14	14	14	14
1488	1496	1504	1512	7	7	7	7	14	14	14	14
1496	1504	1512	1520	7	7	7	7	14	14	14	14
1504	1512	1520	1528	7	7	7	7	14	14	14	14
1512	1520	1528	1536	7	7	7	7	14	14	14	14
1520	1528	1536	1544	7	7	7	7	14	14	14	14
1528	1536	1544	1552	7	7	7	7	14	14	14	14
1536	1544	1552	1560	7	7	7	7	14	14	14	14
1544	1552	1560	1568	7	7	7	7	14	14	14	14
1552	1560	1568	1576	7	7	7	7	14	14	14	14
1560	1568	1576	1584	7	7	7	7	14	14	14	14
1568	1576	1584	1592	7	7	7	7	14	14	14	14
1576	1584	1592	1600	7	7	7	7	14	14	14	14
1584	1592	1600	1608	7	7	7	7	14	14	14	14
1592	1600	1608	1616	7	7	7	7	14	14	14	14
1600	1608	1616	1624	7	7	7	7	14	14	14	14
1608	1616	1624	1632	7	7	7	7	14	14	14	14
1616	1624	1632	1640	7	7	7	7	14	14	14	14
1624	1632	1640	1648	7	7	7	7	14	14	14	14
1632	1640	1648	1656	7	7	7	7	14	14	14	14
1640	1648	1656	1664	7	7	7	7	14	14	14	14
1648	1656	1664	1672	7	7	7	7	14	14	14	14
1656	1664	1672	1680	7	7	7	7	14	14	14	14
1664	1672	1680	1688	7	7	7	7	14	14	14	14
1672	1680	1688	1696	7	7	7	7	14	14	14	14
1680	1688	1696	1704	7	7	7	7	14	14	14	14
1688	1696	1704	1712	7	7	7	7	14	14	14	14
1696	1704	1712	1720	7	7	7	7	14	14	14	14
1704	1712	1720	1728	7	7	7	7	14	14	14	14
1712	1720	1728	1736	7	7	7	7	14	14	14	14
1720	1728	1736	1744	7	7	7	7	14	14	14	14

11/17 DECEASED 1-17 NEW LAMPS, MAGNETIC BALLAST



FORM 2.3.1.1

SIMPLIFIED LIGHTING DESIGN CALCULATION									
2 X 4 RECESSED, FLUORESCENT FIXTURES : 7-9 32W LAMP/ELECTRONIC BALLAST									
Fixture	Lumens Output Per Luminaire	Input Watts	Rated output lumens/fixture	CU x LUF					
1-Lamp	2552	29							
2-Lamp	5104	58							
3-Lamp	7656	87							
4-Lamp	10208	116							
Calculated based on large table RCR 18 Light loss factor LUF 0.75 Floor surface reflectance 80-90-70 Coefficients of Utilization CU 0.67									
Illuminance and Energy Consumed									
Fixture Spacing Center-to-Center	Area of Luminaire sq ft	1-Lamp		2-Lamp		3-Lamp		4-Lamp	
		fc	Watts/ft ²	fc	Watts/ft ²	fc	Watts/ft ²	fc	Watts/ft ²
4x4	16	27	0.60	53	1.21	60	1.87	107	2.42
5x4	20	20	0.45	40	0.91	60	1.36	80	1.81
6x4	24	16	0.36	32	0.73	48	1.09	64	1.45
6x6	36	13	0.30	27	0.60	40	0.91	53	1.21
8x8	64	11	0.24	21	0.48	32	0.73	43	0.97
10x8	80	8	0.20	16	0.40	27	0.60	36	0.81
12x8	96	8	0.17	15	0.35	23	0.52	31	0.69
16x16	256	8	0.17	15	0.35	23	0.52	31	0.69

For space with ceiling cavity ratio (CCR) other than 1.0, use the following multiplying factors (F):
 RCR=2: F=0.80, RCR=3: F=0.79, RCR=4: F=0.78, RCR=5: F=0.64, RCR=6: F=0.58, RCR=7: F=0.52, RCR=8: F=0.48, RCR=9: F=0.45, RCR=10: F=0.4

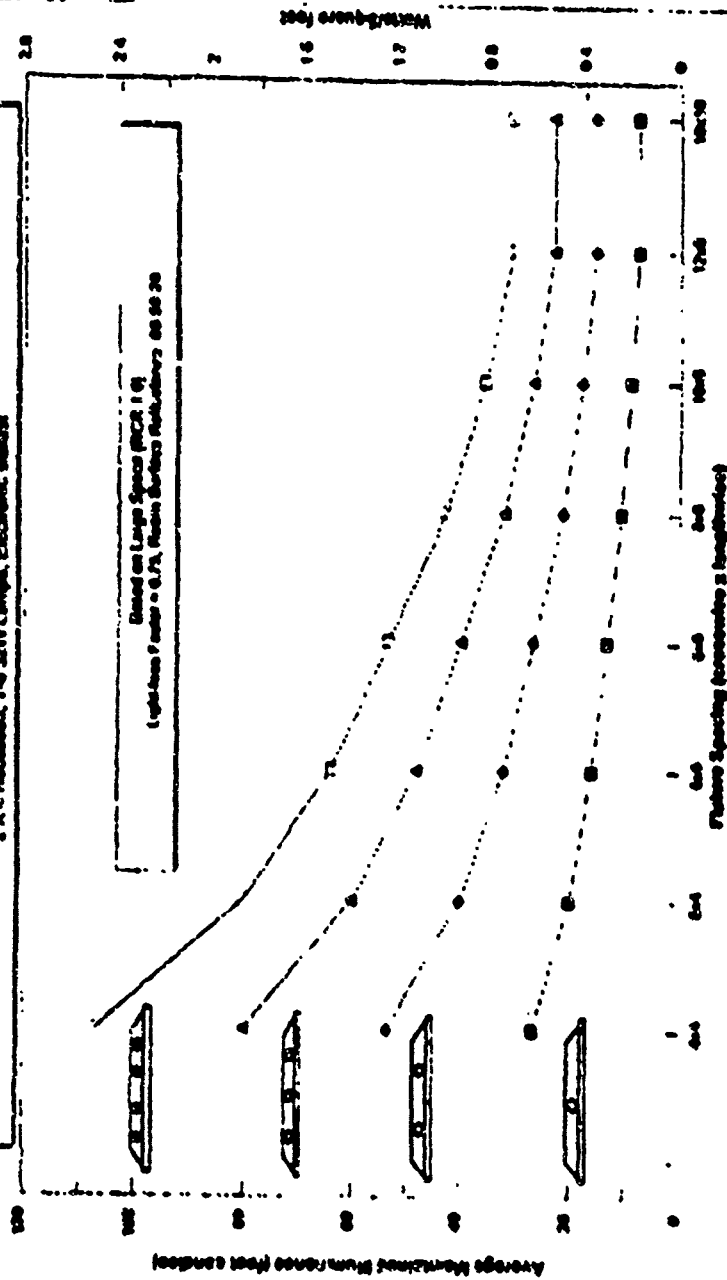
RCR = $\frac{2.5 \times \text{Area} \times \text{Height}}{\text{Length} \times \text{Width}}$ Where H is vertical distance from the fixture to work plane

Multiplying Factor For Reflector = 1.2

Example: Hospital corridor ceiling 10 ft high and recessed fixture 1 lamp/electronic ballast, and reflector
 $\text{RCR} = \frac{2.5 \times 5 \times 25 \times 10}{5 \times 25 \times 10} = 0.5$ (coefficient of utilization needs to be adjusted)
 Area of luminaire = $5 \times 25 = 125$
 Room Volume (1-lamp fixture) = 27 ft^3
 Adjusted Factor = 1.2 for reflector - and = 0.45 for RCR = 0.5
 Adjusted Illuminance = 15 fc

FORM 2.3.1.1 SIMPLIFIED LIGHTING DESIGN DATA

2 X 4 Footcandle, 1-3 220V Lamps, Electronic Ballast



1-Lamp Fixture 2-Lamp Fixture 3-Lamp Fixture 4-Lamp Fixture

Based on Lamp Spacing (MCS 1.0), Light Loss Factor = 0.75, Minimum Surface Reflectance = 0.50, 20'

2 METHODS AND APPROACH

FY94 LEAP LAMPING FIXTURES STUDY, Ft. Campbell, KY

the fixtures from turning off and on too frequently. Information on recommended buildings to utilize these sensors is found in Section 4, including a sketch of the building's bay floor plan indicating fixtures and proposed locations for photocell sensors.

For occupancy sensors, the ECO objective was to save energy by turning off lights when designated areas are unoccupied. These were evaluated for use in Bianchfield Hospital, Building C. Occupancy sensors will be installed to replace the wall switches to shut lights off automatically during day and evening hours in exam rooms and staff offices.

2.4 ECO LIFE CYCLE COSTS

The life cycle cost analyses for the ECOs are a combination of energy costs, investment costs, maintenance costs, and replacement costs. Each of these components may, or may not, be significant factors in determining the life cycle cost of the project. Each of these cost components has been evaluated for each ECO calculated in order to determine the contribution, if any, to the life cycle cost of the project.

The life cycle costs were calculated using the computer program Life Cycle Costing in Design (LCCID) as required in the Scope of Work.

2.4.1 Energy Costs - Electricity

Energy costs for each type of fuel used in the facilities included in the Scope of Work were obtained from the installation and through the Defense Energy Information System (DEIS). The costs were obtained along with the amount of energy used for FY93. Average energy costs per unit of electricity were calculated. Electricity is the only source of energy related to the study.

The electric energy consumption, demand, and costs for FY93 are shown in Table 2.4.1.1 Fort Campbell Electric. Figure 2.4.1.1 is a bar graph of the monthly consumption and cost. The electric cost to calculate the electric cost savings for this project are as follows:

COST/kWh	= \$ 0.02114/kWh	(No demand)
COST/MWh	= \$ 6.16/MWh	(No demand)
COST/kW	= \$ 11.78/kW	(Monthly demand)

2.4.2 Maintenance and Replacement Costs

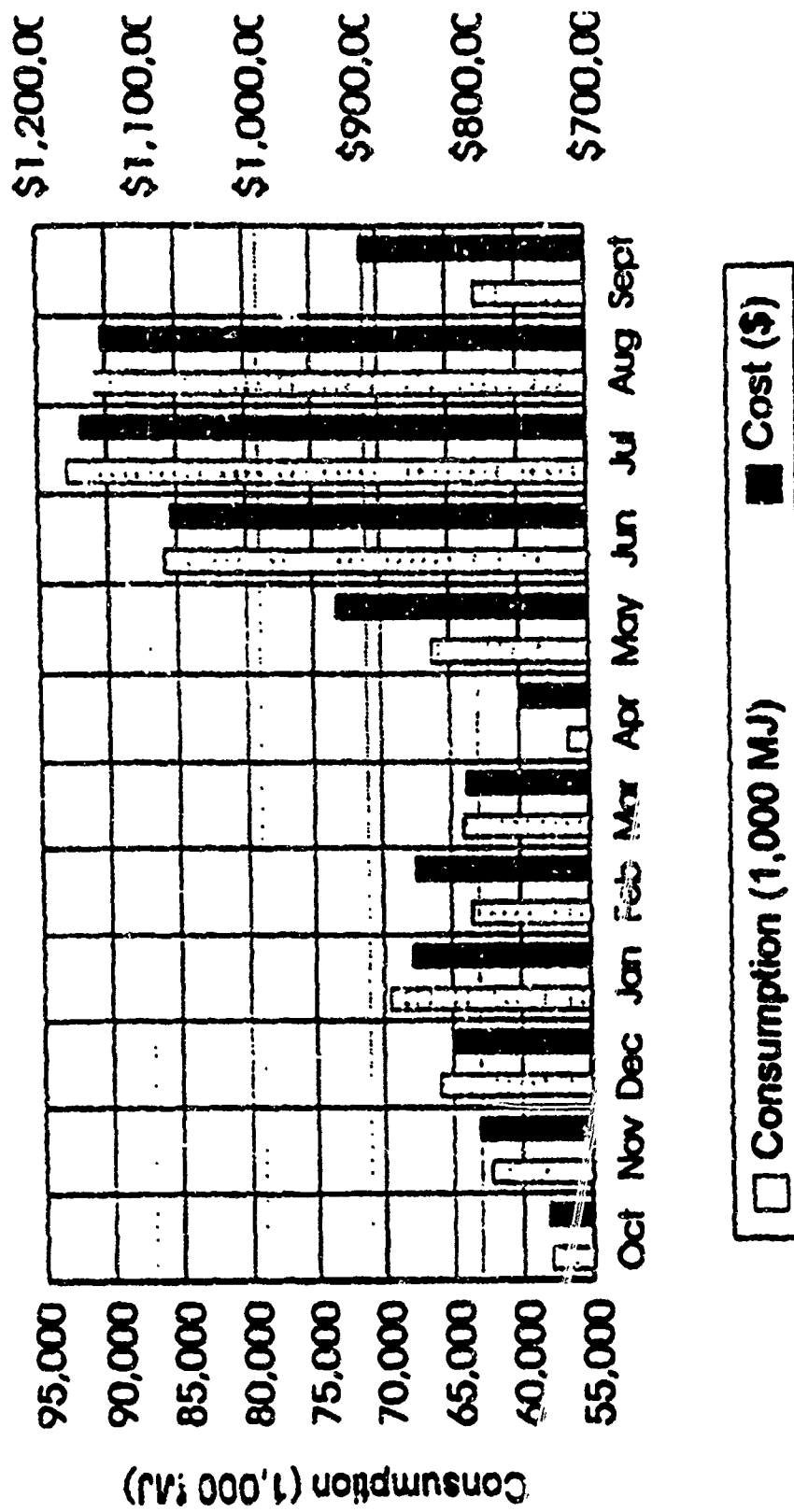
The maintenance and operating cost savings for each ECO were calculated, where applicable. First considered was whether or not the annual recurring (maintenance and operations) non-energy costs

Table 2.4.1.1
Fort Campbell Electric
FY93

Month	Demand (KW)	Consumption (KWH)	Total Cost	Cost/KWH
Oct '92	31,072	16,077,600	\$739,346	\$0.046
Nov	34,020	17,287,200	\$800,806	\$0.046
Dec	33,907	18,320,400	\$821,704	\$0.045
Jan '93	35,381	19,307,400	\$880,667	\$0.046
Feb	36,140	17,644,200	\$857,977	\$0.049
Mar	33,944	17,806,000	\$811,111	\$0.046
Apr	34,863	15,691,200	\$780,262	\$0.048
May	43,697	18,429,600	\$926,917	\$0.050
Jun	47,212	23,872,800	\$1,081,048	\$0.045
Jul	50,008	25,800,800	\$1,180,394	\$0.045
Aug	48,556	25,229,400	\$1,141,714	\$0.045
Sep	43,281	17,488,800	\$802,293	\$0.052
TOTAL	474,882	232,957,200	\$10,864,239	\$0.047
Min	31,072	15,691,200	\$739,346	\$0.045
Max	50,009	25,800,600	\$1,160,394	\$0.052
Avg	39,574	19,413,100	\$905,353	\$0.047

Figure 2.4.1.1
Fort Campbell Electric

FY93



2 METHODS AND APPROACH

1994 EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

would significantly change as a result of each ECO. These values are sometimes unjustifiably manipulated to produce the desired results for the project economic analysis. Therefore, it was typically assumed maintenance and operation activities will continue at the same rate as before the project. However, readily identifiable differences, such as increased lamp life for fluorescent lamps as compared to incandescent lamps, have been included. The estimated costs were obtained from the Means Facilities Costs Data, 1994. Other sources included local service companies and Systems Corp developed data.

The replacement costs (non-energy non-annual recurring costs) for each ECO have been evaluated in the same manner as non-energy annual recurring costs. The same sources for cost data were used for estimating these costs also. Some examples of these types of cost items are as follows:

- = lamp replacements
- = replacing ballasts

It is the policy of Systems Corp to be conservative when estimating these more subjective cost components--which, if improperly evaluated, could result in inappropriate project qualification and funding decisions.

Table 2.4.2.1 shows the maintenance and replacements costs used in the analysis for the different fixture types. At the bottom of this table, the method used to calculate the maintenance savings/cost is illustrated. The calculations for all maintenance savings are included in Section 10 of this report. The maintenance savings are shown only for the buildings included in the final report, not for buildings which were eliminated from the projects due to poor economics. To be more conservative in this evaluation, no maintenance savings were calculated for ECO-2, Lighting Controls. Part of the calculations were performed manually, while part were performed using a computerized spreadsheet. The spreadsheet calculations are for the barracks, which had only two types of fixtures. The Airfield had multiple fixture types, so the spreadsheet calculations were not practical.

TABLE 2.4.2.1 MAINTENANCE AND REPLACEMENT COSTS		
PRODUCT DESCRIPTION	PRODUCT LIFE (HRS)	MATERIAL & LABOR COSTS
INCANDESCENT < 100 WATTS	750	\$3.50
INCANDESCENT 100-300 WATTS	750	\$5.25
INCANDESCENT > 300 WATTS	1,000	\$26.00
QUARTZ - 200 WATTS	2,000	\$32.50
4 FT FLUORESCENT TUBE	20,000	\$5.00
FLUORESCENT EXIT SIGN	20,000	\$6.00
COMPACT FLUORESCENT	20,000	\$18.00
MERCURY VAPOR - 250 WATTS	12,000	\$50.00
MERCURY VAPOR - 400 WATTS	18,000	\$50.00
MERCURY VAPOR - 1000 WATTS	24,000	\$70.00
METAL HALIDE - 250 WATTS	10,000	\$41.00
METAL HALIDE - 400 WATTS	20,000	\$47.00
HIGH PRESSURE SODIUM - 50 WATTS	24,000	\$25.00
HIGH PRESSURE SODIUM - 150 WATTS	24,000	\$38.00

SAMPLE CALCULATION

EXISTING MAINTENANCE COSTS

OF LAMPS X HRS OF OPERATION/YEAR X (1/LAMP LIFE) X MATL & LAB COSTS

PROPOSED MAINTENANCE COSTS

OF LAMPS X HRS OF OPERATION/YEAR X (1/LAMP LIFE) X MATL & LAB COSTS

MAINTENANCE SAVINGS = EXISTING MAINTENANCE COSTS - PROPOSED MAINTENANCE COSTS

FOR EACH OPTION (EXISTING OR PROPOSED) CALCULATE MAINTENANCE COST FOR EACH LAMP TYPE PRESENT WITHIN BUILDING. REPLACEMENT MAY HAVE SAME MAINTENANCE AS EXISTING (EXAMPLE: T12 FLUOR REPLACED WITH T8 FLUOR WITH SAME NUMBER OF LAMPS).

3 PROJECT 1: INTERIOR/EXTERIOR LIGHTING AT AIRFIELD

FY94 EEAP LIGHTING ENERGY STUDY, FT. CAMPBELL, KY

This section contains the Project Development Brochures and the DD 1391 Forms for Project 1: Interior/Exterior Lighting at Airfield. Following the DD 1391 Forms is a project summary table, the life cycle cost analysis for the project, and the calculations and cost estimates for each building included in the report. Below is a detailed index of the information included in this section. Listed beside each building number are the high efficiency lighting replacements utilized in that building.

PDBs	3-2
DD1391 Forms	3-18
Table 3.1: Project Summary - Interior/Exterior Lighting at Airfield	3-26
Project LCCA	3-27

Build	Replacements Utilized	Page
7109	T8 Fluor. HPS Exterior	3-28
7110	T8 Fluor. CF, LED Exit	3-36
7112	T8 Fluor. CF, LED Exit	3-44
7118	T8 Fluor. CF, LED Exit	3-52
7120	T8 Fluor. CF, LED Exit	3-60
7131	T8 Fluor. T8 Fluor with refl. CF	3-68
7133	T8 Fluor. T8 Fluor with refl. CF	3-75
7149	T8 Fluor. with Refl. CF, LED Exit	3-82
7154	T8 Fluor. (3-200W Incan to 1 2-lamp Fluor). CF	3-90
7155	T8 Fluor. with Refl. CF	3-98
7156	T8 Fluor. (3-200W Incan to 1 2-lamp Fluor). CF	3-105
7159	T8 Fluor. with refl. CF	3-113
7160	T8 Fluor. CF, HPS (200 W Incan to 50W HPS)	3-120
7164	T8 Fluor. with Refl. CF, LED Exit	3-129
7165	T8 Fluor.	3-137
7170	T8 Fluor. T8 Fluor with Refl. CF, LED Exit	3-144
7176	T8 Fluor. LED Exit, HPS	3-151
7179	T8 Fluor. with Refl. CF, LED Exit	3-159
7206	T8 Fluor. LED Exit, MH	3-167
7208	T8 Fluor. (405W Incan to 1 2-lamp Fluor). CF, MH	3-175
7210	T8 Fluor. CF, LED Exit, MH, HPS Exterior	3-183
7212	T8 Fluor. CF	3-194
7214	T8 Fluor. (405W Incan to 1 2-lamp Fluor). CF, LED Exit, MH	3-201
7218	T8 Fluor. (405W Incan to 1 2-lamp Fluor). CF, LED Exit, MH	3-211
7243	T8 Fluor. LED Exit, MH, HPS Exterior	3-221
7245	T8 Fluor. (750W Incan to 1 2-lamp Fluor). LED Exit, MH	3-230
7249	T8 Fluor. (750W Incan to 1 2-lamp Fluor). LED Exit, MH	3-239
7281	T8 Fluor. with Refl. LED Exit	3-248

Cutting Out Sheets	3-255
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Notes:

T8 Fluor = T8 fluorescent fixture with electronic ballast.
 With Refl = above fixture with reflective used to reduce lamps
 CF = Compact Fluorescent
 LED Exit = exit sign replacement for incandescent or fluorescent exit sign
 HPS = High Pressure Sodium fixture
 MH = Metal halide
 INC = Incandescent

For a more detailed description of existing fixtures and replacements, please refer to the calculation sheets for each building in this section.

facility

INTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD
Fort Campbell, Kentucky

project coordinator for using service

Arlin Wright

functional requirements summary, PDB-1

3-2

OBJECTIVE:

The objective of this project is to replace existing interior and exterior lighting with high efficiency fixtures and lamps at Campbell Army Airfield. The replacement of the existing lighting will reduce energy consumption and life cycle operating costs for the Airfield in accordance with the Army Energy Resources Management Plan (ERMP) and Executive Order 12759.

functional requirements summary, PDB-1

3-3

APPENDIX C
DOCUMENTATION CHECKLIST

A. SPECIAL CONSIDERATIONS

171A		Required by This Regulation	By Other Regulation	Comments Assigned	Comments Assigned
A-1	Cost estimates for each primary and supporting facility	R	D		
A-2	Telecommunications system coordination with USACC and authorization for exceptions	NR			
A-3	Coordination with state and local governments requirements (wind tunnels, medical facilities, construction and operating permits, electromagnetic coordination, etc.)	R	A		
A-4	Assignment of engineer	NR			
A-5	Economic analysis of distribution	F	D		
A-6	Approval for new starts	NR			
A-7	International aspects of program (ISOP) coordination with U.S. European command and NATO (includes cost estimates and comparison) (includes rate of exchange used in estimates)	NR			
A-8	Impact of historic preservation on the project, by appropriate archeologist and coordination with historic preservation officer and others, caused on historic preservation	NR			
A-9	Exception to established criteria	NR			
A-10	Coordination with various state agencies (Private: Marine, General Services, etc.)	R			
A-11	Identification of related or support projects in progress (or to be completed)	R			
A-12	Required completion date	R			
Other Special Considerations List and number items					
1. See Appendix A					

REQUIRED OR NOT REQUIRED - Not relevant or no information to be furnished. Enter "R" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summary log or explained and attached.

DOCUMENT ATTACHED - Significant information is in existing documents which is attached.

* BY THIS W (Check and insert appropriate letter)

- A - DPAS
- B - Using Service
- C - Construction Service
- D - Design
- E - Other (Check Comments Attached and explain)

documentation checklist

3-6

DA FORM 5023-A-R, Feb 82

TN 1-600-3 C-8

B. SITE DEVELOPMENT

ITEM		Designing Site Planning	To Be Reviewed	Comments Attaching	Comments Attaching
B-1	Consultation with the District Office to determine and evaluate flood plain hazards				
B-2	Preparation, submission, and/or approval of new				
(A)	General Site Plan	NR			
(B)	Annotated General Site Plan	NR			
(C)	Sheeted Site Plan	NR			
(D)	Facilities Requirements Section	R			
B-3	Preparation of				
(A)	Site Survey	NR			
(B)	Support Information	NR			
B-4	Approval by Department of Dr. or Executive Safety Board (DESS) for Safety Site Plan	NR			
	Other Site Developer's Considerations (List and number items)				
	1. See Project Development Brochure, PDS-1/2				

REQUIRED OR NOT REQUIRED - Not required or no information to complete. Enter "N" in column of required and is required for this project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENTS ATTACHED - Significant information submitted or obtained and attached.

DOCUMENT ATTACHED - Significant information is in pending order, not yet attached.

BY WHOM (Check and insert appropriate letter)

A - ADAS

B - Using Service

C - Construction Service

D - Designer

E - Other (Check Comments Attached and attach)

documentation checklist

3-7

C. ARCHITECTURAL & STRUCTURAL

ITEM		Required or Not Required	Comments	Comments Attached	Comments Attached
C-1	Recognition of and understanding of the program and requirements	NR			
C-2	Evaluation of existing facilities and degree of utilization	R			
C-3	Assessment for future and relocation of existing weapons facilities	NR			
C-4	Evaluation of off-post community facilities	NR			
C-5	Storage and maintenance facilities including nuclear weapons	NR			
C-6	Coordination of medical facilities with Surgeon General	NR			
C-7	Coordination of aviation facilities with FAA	NR			
C-8	Coordination of traffic control and navigation aids with USACC	NR			
C-9	Tabulation of types and numbers of aircraft	NR			
C-10	Evaluation of laboratory research and development and technical maintenance facilities	NR			
C-11	Coordination of operations with Chief of Engineers	NR			
C-12	Review of facilities by USATSA	NR			
C-13	Automatic data processing system or equipment approved when ADP and/or communication centers not connected with related facilities	NR			
C-14	Coordination of data facilities with JCS Postal Service Regional Director	NR			
C-15	Laundry and dry cleaning facilities coordination with ASCI/LC	NR			
C-16	Tenant facilities coordination with installation where site	NR			
C-17	Facilities for or exposed to explosion, toxic chemical, or contamination - known or possible (see item C-4)	NR			
C-18	Analysis of deficiencies	R	0		1
C-19	Consideration of alternatives	R	0		2
C-20	Determination whether facilities will include directly related space or related systems	NR			
C-21	Acquire drawings for alterations or additions	R	C		
C-22	Availability of Standard Design or the adaptable design	NR			
Other Architectural & Structural (List and number items)					
1. See Supplemental Data Detailed Project Justification Paragraphs D3.					
2. See Supplemental Data Detailed Project Justification Paragraph D4.					

REVIEWER CAN NOT REQUIRED - Not enough or no information is available. Enter "NR" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

REVIEWER DETERMINED - Information needed but not currently available. Enter "NR" for information needed.

COMMENTS ATTACHED - Significant information summarized or described and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

007-1000-10000 and -10000-10000-10000

A - Other

B - Other

C - Other

D - Other

E - Other (Check Comments Attached and original)

documentation checklist

3-6

D. MECHANICAL ELECTRICAL & UTILITY SYSTEMS

ITEM		Required or Not Required	To Be Determined	Comments Attached	Documents Attached
1	Full comparison and cost comparison analysis	R	D		
D-3	Energy requirements analysis (ERA)	R	D		
D-3	Conformance with DOD Energy Reduction requirements	R	D		
D-4	Evaluation of existing and/or proposed utility systems	R	D		
Other Mechanical and Utility Systems (List and number items.)					
1. See Special Requirements, Paragraph 3 (SRP-3)					

REQUIRED OR NOT REQUIRED - For selection of information to be submitted. Enter "R" if item is required and is required for this project. Enter "NR" if item is required but is not required for this project.

TO BE DETERMINED - Information needed but not currently sourced. Enter "TBD" for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document. Enter "DA" if attached.

BY WHOM CHECKED AND WHEN - Enter date and initials.

A - AFAC

B - Using Service

C - Construction Service

D - Designer

E - Other (Specify Comments Attached and Attached)

documentation checklist

3-2

DA FORM 5023-D-R, Feb 82

TM 5-100-3 6-11

E. ENVIRONMENTAL CONSIDERATIONS

ENV		Required by this Regulation	To be Determined	Comments Attaching	Signature Attaching
E-1	Environmental impact statement	Y			
E-2	EIA conclusions require Environmental Impact Statement	Y			
E-3	Determination of health characteristics of the project. Assistance in determining existence of air, health, environmental or related hazards may be requested from Aberdeen Proving Ground AFM 21010 the Office of the Surgeon General, ADH 2455 from Army Environmental Hygiene Agency	Y			
E-4	Air/water pollution permit, coordination with agencies and compliance with standards at Federal, State and local level	NR			
E-5	Corrective measures associated with Environmental Impact Statement or assessment - see Appendix and available	NR			
Other environmental concerns list and number items:					
1. See Supplemental Data Detailed Project Justification Paragraph 05.					

REQUIRED OR NOT REQUIRED - For projects of no information is provided. Enter "Y" if item is required and is required for the project. Enter "NR" if item is not required and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter "Y" if item is required and is not required for the project.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document. Enter "Y" if item is required and is not required for the project.

BY WHOM? Check and attach appropriate letter

A - Staff
B - Acting Service
C - Construction Service
D - Designer
E - Other (Enter Comments Attached and attached)

documentation checklist

3-10

APPENDIX D
TECHNICAL DATA CHECKLIST

0-1
J-11

A. SPECIAL CONSIDERATIONS

A. SPECIAL CONSIDERATIONS	
A-1	Portion of the restriction of unusual circumstances existing in respect to the use and maintenance of the equipment
A-2	Construction phase requirements
A-3	Functional support equipment requirements: specified structure and materials to be built in
A-4	Equipment in place and maintenance
A-5	Other equipment and furniture (DANA, DPA, and other)
A-6	Special studies and tests (thermal analysis, combat stress testing, new technology testing, etc.)
A-7	Type of construction (permanent, temporary, semi-permanent)
A-8	Government furnished equipment (equipment, equipment, and equipment) and special handling and storage requirements (plans used for equipment)
Other special considerations (list and number items)	

Design of the Equipment	To Be Designed	Comments Attached	Equipment Attached
SE			
P	2		
SE			
SE			
SE			
SE			
SE			
SE			
SE			

REQUIRED OR NOT REQUIRED - For reasons of the information to be furnished, enter "R" if not a requirement and "N" if required for this project. Enter "NR" if item is not required and "R" if required for this project.

TO BE DETERMINED - Information needed but not a requirement. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information summarized or explained and attached.

1. W-DM (Check one in the appropriate column)

A - DPAE

B - Using Service

C - Construction Service

D - Design

E - Other (Check Comment Attached and add on)

technical data checklist

DA FORM 5024-A-R, Feb 82

B. SITE DEVELOPMENT		Required by Project Manager	Required by Design Engineer	Required by Construction Manager	Required by Other Agency	Required by Other Agency
B-1 Construction Restrictions or Guidelines Pertaining to: (A) site access and preferred construction routes		R	A			
(B) Airfield clearance, explosive storage, working hours, safety, etc.		NR				
(C) Facilities and/or functions of adjoining areas (structures, materials, impact)		R	A			
B-2 Real estate actions (acquisition, disposal, lease, right-of-way)		NR				
B-3 Demolition/relocation required (date)						
(A) Special considerations due to explosives/radioactivity, chemicals, contamination/asbestos emissions/toxic gases		R	A	I		
(B) Restrictions on disposal of demolished/relocated material including hazardous waste		NR				
B-4 Pavement types and requirements (including traffic surveys and ATMC coordination)		NR				
B-5 Landscape considerations						
(A) Protection of existing vegetation		R	A			
(B) Stockpile topsoil		NR				
Other Site Development (List and number items)						
1. There is a possibility that the existing lighting may contain PCB's in the ballasts.						

REQUIRED OR NOT REQUIRED - For required or no information is determined. Enter "R" if item is required and is required for this project. Enter "NR" if item is not required and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and entered.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHICH AGENCY AND UNDER WHAT AUTHORITY

A - AFAC
B - Army Service
C - Construction Services
D - Designer
I - Other Agency Comments Attached and Entered

technical data checklist

3-13

C. ARCHITECTURAL & STRUCTURAL

ITEM		Required or Not Required	To Be Determined	Comments Attached	Document Attached
C-1	Vibration-producing equipment requiring isolation	R	D		
C-2	Seismic loads and other design loads criteria (typhoon, hurricane, earthquake loads high or low ion potential)	NR			
C-3	Protective shelter evaluation and resistant design criteria (conventional/nuclear blast and radiation, chemical/biological)	NR			
C-4	Unusual foundation requirements (water, wind, erosion, sand foundations, mats, special treatment, permafrost areas, soil bearing)	NR			
C-5	Designation and strength of units to be accommodated	NR			
C-6	Requirements and data for shelter design criteria	NR			
C-7	Unusual types and loads loads shelter equipment	NR			
C-8	Security features (armor, armor, shields, shielding, secure areas)	NR			
Draw Architectural & Structural (L&I) and number items.					

REQUIRED OR NOT REQUIRED - Not relevant or no information to comment. Enter "R" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and explained.

DOCUMENT ATTACHED - Significant information is attached as a document or drawing.

BY WHOM (Name and Initials) (Date)

A - AFAC

B - Using Service

C - Construction Service

D - Designer

E - Other (Check Comments Attached and explain)

technical data checklist

3-14

DA FORM 5024-C-R, Feb 62

TJ 5-100-3 D-9

D. MECHANICAL, ELECTRICAL, & UTILITY SYSTEMS

ITEM		Required by Designing Agency	Required by Designing Agency	Required by Designing Agency	Required by Designing Agency
D-1	Special mechanical requirements or considerations (include crane, hoist, etc.)	NR			
D-2	Special base load periods and peak loading (include)	NR			
D-3	Mounting considerations (accessibility of equipment, compatibility with existing equipment)	R	D		
D-4	Pumping-capacity, general system type and characteristics (include and/or existing, incl. comments on engine)	NR	D		
D-5	Heating-capacity, general system type and characteristics (include and/or existing)	NR			
D-6	Ventilating, air conditioning/cooling-capacity, general system type and characteristics (include and/or existing)	R	D		
D-7	Electrical-capacity, general system type and characteristics incl. lighting, communication, etc. (include and/or existing)	NR			
D-8	Water supply/waste treatment-capacity, general system type and characteristics (include and/or existing)	NR			
D-9	Energy requirements (fuel conversion, storage, waste types of fuel, etc.)	R	D		
D-10	Solar energy evaluation	NR			
Other Mechanical & Utility Systems (List and number items)					

REQUIRED OR NOT REQUIRED - Not required or no information or no comment. Enter "NR" if item is required and is required for the project. Enter "NR" if item is required and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter "NR" for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in existing documents which is attached.

* BY WHOM CHECKED AND CHECKED APPROPRIATE METHOD

- A - SPACE
- B - Using Service
- C - Construction Service
- D - Designer
- E - Other (Check Comments attached and explain)

technical data checklist

3-15

DA FORM 5024-D-R, Feb 82

TN 3-500-3 D-11

F. FIRE PROTECTION

ITEM

F-1 Special fire protection systems or features (detection and suppression equipment, hazards, etc.)
Other Fire Protection Considerations (List and number items)

Required or Not Required	To Be Determined	Comments Attached	Remarks Attached
NR			

REQUIRED OR NOT REQUIRED - Not relevant or no information to determine. Enter "R" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

Enter which code and insert appropriate letter:

- A - ASAE
- B - Army Service
- C - Construction Service
- D - Designer
- E - Other (Check Comments Attached and explain)

Technical data checklist

3-16

DA FORM 5024-F-R, Feb 82

TXI 5-800-3 D-13

1. COMPONENT ARMY		FY 19 94 MILITARY CONSTRUCTION PROJECT DATA		2. DATE 23 September 94	
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky			4. PROJECT TITLE Interior/Exterior Lighting Replacement at Army Airfield		
5. PROGRAM ELEMENT	6. CATEGORY CODE	7. PROJECT NUMBER ECIP #1	8. PROJECT COST (\$000) 2,700.90		
9. COST ESTIMATES					
ITEM		UNIT	QUANTITY	UNIT COST	COST (\$000)
Primary Facility					
Interior and Exterior Light Fixtures		Lot	1	611.70	611.70
Subtotal					611.70
Contingency (10%)					61.20
Total Contract Cost					672.90
Supervision, Inspection and Overhead (5.5%)					37.00
Total Request					709.90

10. DESCRIPTION OF PROPOSED CONSTRUCTION

The existing interior/exterior lighting is a combination of standard efficiency fluorescent, incandescent, and mercury vapor fixtures. The proposed project will replace the interior and exterior lighting fixtures with T-8 fluorescents with high efficiency electronic ballasts, compact fluorescents, LED exit signs, high pressure sodium fixtures, and metal halide fixtures. The implementation of this project will save 6,880,307 MJ/yr of electrical energy. The first year savings is \$130,856 and the Savings to Investment Ratio (SIR) is 2.21.

11. REQUIREMENT

Project: The proposed interior and exterior lighting project replaces lighting at Campbell Army Airfield in the following buildings with energy efficient lighting: 7109, 7110, 7112, 7118, 7120, 7131, 7133, 7149, 7154, 7155, 7156, 7159, 7160, 7164, 7165, 7170, 7176, 7179, 7208, 7208, 7210, 7212, 7214, 7218, 7243, 7245, 7249, and 7281.

Requirement: The project is required to reduce the energy consumption of lighting and to comply with the Army Energy Resources Management Plan (ERMP) and Executive Order 12759. The proposed project will reduce annual energy consumption by 6,880,307 MJ/yr and annual energy cost by \$130,856.

Current Situation: The existing lighting at Campbell Army Airfield in the above listed buildings is inefficient fluorescent, incandescent, mercury vapor fixtures.

1 COMPONENT ARMY	2 DATE 23 September 84
3 INSTALLATION AND LOCATION Fort Campbell, Kentucky	
4 PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD	5 PROJECT NUMBER ECIP #1

Impact if not provided: If the proposed project is not funded, a reduction of 6,880,307 MJ/yr cannot be achieved, and excessive amounts of energy will continue to be used. There will be no contribution to energy reduction goals established for United States Army facilities by Army Headquarters.

Colonel, USA
Commanding

ESTIMATED CONSTRUCTION START:	September 1995	INDEX:
ESTIMATED MIDPOINT OF CONSTRUCTION:	April 1996	INDEX:
ESTIMATED CONSTRUCTION COMPLETION:	November 1996	INDEX:

DETAILED JUSTIFICATIONS

D1. GENERAL

The proposed project encompasses the replacement of lighting at Campbell Army Airfield in 28 buildings. The project will decrease the energy consumption of the lighting system without reducing light levels except where necessary.

D2. ACCOMMODATIONS NOW IN USE:

The existing lighting systems are comprised of standard efficiency fluorescent, incandescent, and mercury vapor fixtures.

D3. ANALYSIS OF DEFICIENCY:

Currently, Campbell Army Airfield buildings 7109, 7110, 7112, 7118, 7120, 7131, 7133, 7149, 7154, 7155, 7156, 7159, 7160, 7164, 7165, 7170, 7176, 7179, 7206, 7208, 7210, 7212, 7214, 7218, 7243, 7245, 7249, and 7281 are using standard or low efficiency fixtures for lighting. The purpose of this project is to replace the existing lighting with new light fixtures which are much more efficient. The current deficiency results in large amounts of energy usage to maintain adequate lighting.

DD FORM 1381
1 DEC 76

PREVIOUS EDITIONS MAY BE USED INTERNALLY
UNLESS EXHAUSTED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

1 COMPONENT ARMY	2 DATE 23 September 94
3 INSTALLATION AND LOCATION Fort Campbell, Kentucky	
4 PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD	5 PROJECT NUMBER ECIP 41
<p>D4. CONSIDERATION OF ALTERNATIVES:</p> <p>The only alternatives to proposed project are to install lower efficiency light fixtures. The disadvantages of using lower efficiency light fixtures is that less energy savings can be realized without significantly reducing the construction cost. If a less efficient light fixture is selected, the project would have a lower SIR.</p> <p>D5. CRITERIA FOR PROPOSED PROJECT:</p> <p>The proposed project will conform with all applicable federal and United States Army Regulations.</p> <p>D6. PROGRAM FOR RELATED EQUIPMENT:</p> <p>No equipment funded from appropriations other than MCA are required.</p> <p>D7. DISPOSAL OF PRESENT ASSETS.</p> <p>Light fixtures in the 28 buildings at Campbell Army Airfield will be disposed.</p> <p>D8. SURVIVAL FACILITIES:</p> <p>The proposed project is not suitable for inclusion of protective shelters.</p> <p>D9. SUMMARY OF ENVIRONMENTAL CONSEQUENCES:</p> <p>The proposed project has been analyzed and will not adversely impact the environment. Energy savings resulting from the project will conserve natural resources.</p> <p>D10. EVALUATION OF FLOOD HAZARDS AND ENCHOACHMENT ON WETLANDS:</p> <p>It has been determined that these facilities are not located in a flood plain and they do not encroach on wetlands.</p> <p>D11. ECONOMIC JUSTIFICATION:</p> <p>The proposed project qualifies under ECIP Guidelines in AR-415-15. SIR for the project is 2.21 with a simple payback of 5.43 years. See Economic Analysis, SPP-1</p>	

DD FORM 1361
1 OCT 78

PREVIOUS EDITIONS MAY BE USED INTERNALLY
UNTIL EXHAUSTED

FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

1 COMPONENT ARMY	FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	2 DATE 23 September 94
3 INSTALLATION AND LOCATION Fort Campbell, Kentucky		
4 PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD		5 PROJECT NUMBER ECIP #1

D12. UTILITY AND COMMUNICATION SUPPORT:

- A. No related utility support projects are programmed. Adequate utilities are available to support the project.
- B. No telecommunication support is required.

D13. PROTECTION OF HISTORIC PLACES AND ARCHEOLOGICAL SITES:

The project involves the replacement of light fixtures in and around existing buildings. Review procedures have been implemented for this project in accordance with 35 CFT 800. The review has established that there will be no effect.

D14. PROJECT DEVELOPMENT BROCHURE (PART 1):

A Project Development Brochure was prepared on 23 September 94 and is attached as a part of the programming documentation.

D15. ENERGY REQUIREMENTS:

The proposed project will reduce present energy consumption by 6,880,307 MJ/yr at the cost savings of \$130,656 per year. See Energy Requirements Appraisal (ERA) in Special Requirements, Paragraph 3 (SRP-3).

D16. PROVISION FOR THE HANDICAPPED:

No provisions for the handicapped will be made since the scope of the project is in no way applicable to designing for the handicapped.

D17. REAL PROPERTY MAINTENANCE ACTIVITY (RPMA) ANALYSIS:

- A. Physical impact: There will be light fixtures removed and replaced by new light fixtures. No new structures will be added.

1. COMPONENT ARMY		FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA		2. DATE 23 September 94									
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky													
4. PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD				5. PROJECT NUMBER ECIP #1									
<p>B. Operations and Maintenance (O&M) impact:</p> <table border="1"> <thead> <tr> <th>YEAR</th> <th>O&M NET CHANGE (\$000)</th> </tr> </thead> <tbody> <tr> <td>1994</td> <td>-7.6</td> </tr> <tr> <td>1995</td> <td>-7.6</td> </tr> <tr> <td>1996</td> <td>-7.6</td> </tr> </tbody> </table> <p>C. Backlog of Maintenance and Repair (BMAR) impact:</p> <p>There will be a reduction in the number of fixtures and an increase in fixture life expectancy. There will be no effect on BMAR.</p> <p>D18. COMMERCIAL ACTIVITIES:</p> <p>The proposed project is not a "New Start Expansion" as defined by DA Circular 235-1. The project has been reviewed in light of the requirements of commercial and industrial facilities. It has been determined that whereas the project does not affect commercial facilities, the requirements of DA Circular 235-1 does not apply.</p>						YEAR	O&M NET CHANGE (\$000)	1994	-7.6	1995	-7.6	1996	-7.6
YEAR	O&M NET CHANGE (\$000)												
1994	-7.6												
1995	-7.6												
1996	-7.6												

1 COMPONENT ARMY	FY 19 94 MILITARY CONSTRUCTION PROJECT DATA	2 DATE 23 September 94																																																																																																							
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DD FORM 1391
1 DEC 78

REVIEWED TO BE USED INTERNALLY
UNLESS EXHAUSTED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

1. COMPONENT ARMY		2. DATE 23 September 84	
3. INSTALLATION AND LOCATION Fort Campbell, Kentucky			
4. PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY AIRFIELD		5. PROJECT NUMBER ECIP #1	
SPECIAL REQUIREMENTS PARAGRAPH 1 (SRP-1) (continued)			
4. FIRST YEAR DOLLAR SAVINGS		\$ 130,666	
5. SIMPLE PAYBACK		5.43 Years	
6. TOTAL NET DISCOUNTED SAVINGS		\$1,517,645	
7. DISCOUNTED SAVINGS RATIO		2.21	

NO FORM 1331
DEC 79

PREVIOUS EDITIONS MAY BE USED
UNTIL EXHAUSTED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

3-24

1 COMPONENT ARMY	2 FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA	3 DATE 23 September 94
4 INSTALLATION AND LOCATION Fort Campbell, Kentucky		
6 PROJECT TITLE INTERIOR/EXTERIOR LIGHTING REPLACEMENT AT ARMY HOSPITAL		5 PROJECT NUMBER ECIP #1
<p>SPECIAL REQUIREMENTS PARAGRAPH 3 (SRP-3):</p> <p>Energy Requirements Appraisal (ERA)</p> <ol style="list-style-type: none"> 1. Project Description: Replace existing lighting systems with more efficient lighting systems without reducing the light levels. 2. Estimated Energy Consumption: The buildings are currently lit by standard efficiency lighting. The existing lighting system consumes 12,892,789 MJ/yr of energy. Replacing the existing lighting with high efficiency lighting will result in 6,880,307 MJ/yr of electrical energy savings, a fifty-three percent (53%) reduction in current energy consumption. 3. Energy Sources: No new energy sources are required for the proposed project. The use of solar energy for this project is impractical. 4. Energy Use Impacts: The proposed project will substantially reduce the consumption of electricity for lighting. The burden on the existing base distribution system will be lessened. 5. Energy Conservation: The proposed project will reduce annual energy consumption by 6,880,307 MJ/yr with annual energy cost savings of \$130,656. The project complies with Army Resources Management Plan (ERMP) and Executive Order 12758. 6. Energy Alternatives: The proposed project represents the greatest possible reduction in energy consumption fifty-three percent (53%), without reducing the current lighting levels. The current levels do not exceed the levels recommended by ASHRAE. 7. Energy Effects: The proposed project provides positive environmental effects. It reduces the current energy consumption by fifty-three percent (53%), effectively reducing the consumption of non-renewable fuel sources. The degrading of environmental standards would not make more efficient energy sources available. 8. Basis of Approval: Total energy requirements and alternative fuel sources have been considered and included in this appraisal or discarded as applicable. 		

TABLE 3.1

THE

LIFE CYCLE COST ANALYSIS SUMMARY
 ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) STUDY: ECO1AAPT
 INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3 LCCID 1.080
 PROJECT NO. & TITLE: ECO1AAPT INTERIOR LIGHTING - AIRFIELD TOTAL
 FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING
 ANALYSIS DATE: 09-14-94. ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENS

1. INVESTMENT
 A. CONSTRUCTION COST \$ 645364.
 B. SIOH \$ 32268.
 C. DESIGN COST \$ 32268.
 D. TOTAL COST (1A-1B-1C) \$ 709900.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0.
 F. PUBLIC UTILITY COMPANY REBATE \$ 0.
 G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 709900.

2. ENERGY SAVINGS (+) / COST (-)
 DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

FUEL	UNIT COST \$/MBTU (1)	SAVINGS MBTU/YR (2)	ANNUAL \$ SAVINGS (3)	DISCOUNT FACTOR (4)	DISCOUNTED SAVINGS (5)
A. ELECT	\$ 6.18	6521.	\$ 40300.	12.43	\$ 500926
B. DIST	\$.00	0.	\$ 0.	13.56	\$ 0
C. RESID	\$.00	0.	\$ 0.	15.09	\$ 0
D. NAT G	\$.00	0.	\$ 0.	15.86	\$ 0
E. COAL	\$.00	0.	\$ 0.	13.61	\$ 0
F. LPG	\$.00	0.	\$ 0.	12.64	\$ 0
M. DEMAND SAVINGS			\$ 82741.	11.85	\$ 980481.
N. TOTAL		6521.	\$ 123041.		\$ 1481407.

3. NON ENERGY SAVINGS (+) / COST (-)

A. ANNUAL RECURRING (+/-)
 (1) DISCOUNT FACTOR (TABLE A) 11.85
 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 90238.

B. NON RECURRING SAVINGS (+) / COSTS (-)

ITEM	SAVINGS (+) COST (-) (1)	YR OC (2)	DISCNT FACTR (3)	DISCOUNTED SAVINGS (+) / COST (-) (4)
d. TOTAL	\$ 0.			0.

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) / COST (-) (3A2+3Bd4) \$ 90238.

4. FIRST YEAR DOLLAR SAVINGS $2N3-3A+(3Bd1/(YRS ECONOMIC LIFE))$ \$ 130656.

5. SIMPLE PAYBACK PERIOD (1G/4) 5.43 YEA

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 1571645.

7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 2.21
 (IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.71 %

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7100
 AREA: WHITE BLDG
 HOURS/DAY: 24
 DAYS/WEEK: 7
 WILLOW VOLTAGE: 120V

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH/
 DEMAND CHARGE: \$11.75 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 0 28 W/FXFT = 0 WATTS

4 FOOT 1 LAMP 0 48 W/FXFT = 0 WATTS
 16 2 LAMP 0 80 W/FXFT = 1440 WATTS
 3 LAMP 0 144 W/FXFT = 0 WATTS
 4 LAMP 0 192 W/FXFT = 0 WATTS

8 FOOT 2 LAMP 0 132 W/FXFT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 0 58 W/FXFT = 0 WATTS

4 FOOT 0 1 LAMP 0 28 W/FXFT = 0 WATTS
 16 2 LAMP 0 56 W/FXFT = 825 WATTS
 0 3 LAMP 0 87 W/FXFT = 0 WATTS
 0 4 LAMP 0 118 W/FXFT = 0 WATTS

8 FOOT 0 2 LAMP 0 118 W/FXFT = 0 WATTS

BASELINE ENERGY CONSUMPTION

17200 KWH/YR
 45300 MJ/YR
 1.45 KW

ECO ENERGY CONSUMPTION

5197 KWH/YR
 29185 MJ/YR
 0.83 KW

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

16102 MJ/YR
 18.36 MJ/TU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$72 /YR
 \$167 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7100
 AREA: WHITE BLDG
 AREA USE: 12
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 120V

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.76 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 98 W/FXT = 0 WATTS
 4 FOOT 1 LAMP 0 48 W/FXT = 0 WATTS
 2 LAMP 0 90 W/FXT = 0 WATTS
 3 LAMP 0 144 W/FXT = 0 WATTS
 1) 4 LAMP 0 180 W/FXT = 2340 WATTS
 8 FOOT 2 LAMP 0 132 W/FXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 58 W/FXT = 0 WATTS
 4 FOOT 0 1 LAMP 0 20 W/FXT = 0 WATTS
 0 2 LAMP 0 58 W/FXT = 0 WATTS
 0 3 LAMP 0 87 W/FXT = 0 WATTS
 13 4 LAMP 0 118 W/FXT = 1534 WATTS
 8 FOOT 0 2 LAMP 0 118 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 7381 KWH/YR
 BASELINE DEMAND 26380 BLU/YR
 ECO ENERGY CONSUMPTION 4788 KWH/YR
 ECO DEMAND 17230 BLU/YR
 1.53 KW

NET ENERGY SAVINGS 9603 BLU/YR
 NET ENERGY SAVINGS 8.98 MBTU/YR
 NET DEMAND SAVINGS \$114 /YR
 NET DOLLAR SAVINGS \$167 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

EXTERIOR LIGHTING REPLACE

BUILDING #: 7100

AREA USE: 4000
HOURS/YR

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.75 PER KW

EXISTING FIXTURES		REPLACEMENT FIXTURES	
INCAND @	100 WATTS =	0 WATTS	40 WATTS =
2 QUARTZ @	200 WATTS =	400 WATTS	46 WATTS =
LV @	464 WATTS =	0 WATTS	100 WATTS =
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
700 KWH		400 KWH	
6,300 MJ		1,467 MJ	
BASELINE DEMAND		ECO DEMAND	
8.00 KW		0.89 KW	

NET ENERGY SAVINGS
NET ENERGY SAVINGS

4,978 MJ/YR
4.62 MEST/YR

NET DOLLAR SAVINGS

\$29 /YR

27-Jul-94

MeansData for Lotus

Page 1

```

=====
Estimate:      Bldg. 7109      Date:      8 July 1994
Description:   Radar
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City indx:
=====
  
```

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES						
Unit values	0.49	0.00	13.35	0.00	29.00		
Totals	14.07	\$0	\$387	\$0	\$0		13.35 \$387
0207082540	DEMO, QUARTZ FIXTURES						
Unit values	1.00	0.00	27.50	0.00	2.00		
Totals	2.00	\$0	\$55	\$0	\$0		27.50 \$55
002 SITEWORK	17	\$0	\$442	\$0	\$0		\$442

27-Jul-94

MeansData for Lotus

Page 2

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	49.26
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	2.00	28.65	23.62	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	52.47
1661307001	LOW BAY, AL REFLECTOR 50W HPS						
Unit values	2.00	209.00	55.00	0.00	4.00	EA	
Totals	4.00	\$836	\$220	\$0	0.00	\$0	264.00
1661307777	L.E.D. EXIT SIGN SINGLE FACE						
Unit values	1.00	185.00	27.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	212.50
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS						
Unit values	1.40	88.00	38.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	126.50
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.51	84.00	43.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	125.50
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	134.00
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	141.00
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.14	73.00	31.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00	\$0	104.50
1661309909	SUR FLUOR 1X4' W 2 32W T8						
Unit values	1.14	86.00	31.50	0.00	(qty)	EA	
					0.00	\$0	117.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	31.50	0.00	16.00 EA	91.50
Totals	18.24	\$960	\$504	\$0	\$0	\$1,464
1661309913	SUR FLUOR 2X4' W 4 32W T8					
Unit values	1.51	117.00	42.50	0.00	13.00 EA	158.50
Totals	19.63	\$2,521	\$540	\$0	\$0	\$2,061
1661386041	COMP FLUOR LAMP, 12 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016 ELECTRICAL		46	\$3,317	\$1,264	\$0	\$0	\$4,581
ESTIMATE TOTAL		63	\$3,317	\$1,706	\$0	\$0	\$5,023
SALES TAX	5.00%		\$166				
MATL MARKUP	-40.00%		(\$1,327)				
LABOR MARKUP	-13.40%			(\$229)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$2,156	\$1,477	\$0	\$0	\$3,633
CONTINGENCY	10.00%						\$363
BOND	2.50%						\$91
PROFIT	10.00%						\$363
JOB TOTAL							\$4,451

27-Jul-94

MeansData for Lotus

Page 5

Estimate: Bldg. 7109 Date: 8 July 1994
Description: Radar
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City index:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	17	\$0	\$442	\$0	\$0	\$442
U16 ELECTRICAL	46	\$3,317	\$1,264	\$0	\$0	\$4,581
TOTAL	63	\$3,317	\$1,706	\$0	\$0	\$5,023
SALES TAX	5.00%					
MATL MARKUP	-40.00%	(\$1,327)				
LABOR MARKUP	-13.40%		(\$229)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$2,156	\$1,477	\$0	\$0	\$3,633
CONTINGENCY	10.00%					\$363
BOND	2.50%					\$91
PROFIT	10.00%					\$363
JOB TOTAL						\$4,451

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7110
 AREA: ENTIRE BLDG
 AREA USE: 14
 HOURS/DAY: 6
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 120V

ELECTRIC COST: 10.0211 PER KWH
 ENERGY CHARGE: \$11.78 PER KW
 DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 25 W/FXT = 0 WATTS
 4 FOOT 1 LAMP 25 W/FXT = 0 WATTS
 15 2 LAMP 25 W/FXT = 134 WATTS
 3 LAMP 25 W/FXT = 144 WATTS
 4 LAMP 25 W/FXT = 182 WATTS
 8 FOOT 2 LAMP 25 W/FXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 2 LAMP U 50 W/FXT = 0 WATTS
 4 FOOT 1 LAMP 25 W/FXT = 0 WATTS
 15 2 LAMP 25 W/FXT = 134 WATTS
 3 LAMP 25 W/FXT = 144 WATTS
 4 LAMP 25 W/FXT = 182 WATTS
 8 FOOT 2 LAMP 25 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION

418 KWH/YR
 1712 WATT
 136 KW

ECO ENERGY CONSUMPTION

3378 KWH/YR
 12181 WATT
 2.33 KW

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

5461 MJ/YR
 1.17 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$88 /YR
 \$61 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7110
 AREA: ENTRY WAY
 LAMP USE: 14
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1
 BUILDING VOLTAGE: 120V

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
4 LAMPS @	22 WATTS	4 LAMPS @	13 WATTS
6 LAMPS @	60 WATTS	0 LAMPS @	18 WATTS
75 LAMPS @	75 WATTS	0 LAMPS @	26 WATTS
58 LAMPS @	58 WATTS		
180 LAMPS @	180 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
797 KWH		189 KWH	
2728 MJ		697 MJ	
6.21 KW		0.85 KW	
BASELINE DEMAND		ECO DEMAND	

NET EME NET ENERGY SAVINGS 3044 MJ/YR
 NET EME NET ENERGY SAVINGS 1.94 MBTU/YR
 NET DEMAND SAVINGS \$32 /YR
 NET DOLLAR SAVINGS \$34 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT				ELECTRIC COSTS:	
		ENERGY CHARGE		PER KW-HR	
		DEMAND CHARGE		PER KW	
		30.0211		311.70	

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MeansData for Lotus

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*****
Estimate:      Bldg. 7110      Date:      4 July 1994
Description:    Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
*****

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
02C7082121	DEMO, 2x4 FLUOR FIXTURES					16.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		7.76	\$0	\$214	\$0	\$0	\$214
0207082123	DEMO, INLAND FIXTURES / EXIT SIGNS					7.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		1.81	\$0	\$50	\$0	\$0	\$50
002 SITEWORK		10	\$0	\$264	\$0	\$0	\$264

=====						
Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total
=====						
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					
Unit values	0.94	26.74	22.52	0.00	(qty) Ea.	
Totals	0.00	\$0	\$0	\$0	0.00	49.26
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					
Unit values	1.00	28.65	23.82	0.00	(qty) Ea.	
Totals	0.00	\$0	\$0	\$0	0.00	52.47
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					
Unit values	1.00	50.00	27.50	0.00	3.00 EA	
Totals	3.00	\$150	\$83	\$0	0.00	77.50
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	126.50
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	16.00 EA	
Totals	24.16	\$1,344	\$664	\$0	0.00	125.50
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	134.00
1661309804	REC FLUOR TROFFER 2X6' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	141.00
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	104.50
1661309809	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	117.50
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	
					0.00	121.50

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MeansData for Lotus

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④ Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 4 13 W FL					
	WALL / CEILING MOUNT					
Unit values	1.00	35.50	27.50	0.00	1.00 EA	63.00
Totals	1.00	\$36	\$28	\$0	\$0	\$64

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
UL6 ELECTRICAL		29	\$1,530	\$775	\$0	\$0	\$2,305
ESTIMATE TOTAL		39	\$1,530	\$1,039	\$0	\$0	\$2,569
SALES TAX	5.00%		\$77				
MATL MARKUP	-40.00%		(\$612)				
LABOR MARKUP	-13.40%			(\$139)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$995	\$900	\$0	\$0	\$1,894
CONTINGENCY	10.00%						\$189
BOND	2.50%						\$47
PROFIT	10.00%						\$189
JOB TOTAL							\$2,320

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MeansData for Lotus

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Estimate: Bldg. 7110 Date: 8 July 1994
 Description: Barracks
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	10	\$0	\$264	\$0	\$0	\$264
U16 ELECTRICAL	29	\$1,530	\$775	\$0	\$0	\$2,305
TOTAL	39	\$1,530	\$1,039	\$0	\$0	\$2,569
SALES TAX	5.00%	\$77				
MATL MARKUP	-40.00%	(\$612)				
LABOR MARKUP	-13.40%		(\$139)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$995	\$900	\$0	\$0	\$1,894
CONTINGENCY	10.00%					\$189
BOND	2.50%					\$47
PROFIT	10.00%					\$189
JOB TOTAL						\$2,320

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
15 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7112
AREA: DAYROOMS
SQUARE FEET: 14
HOURS/DAY: 7
DAYS/WEEK: 7
BUILDING VOLTAGE: 120V

ELECTRIC COSTS:
ENERGY CHARGE: \$0.0211 PER KWH
DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 58 W/FXT = 0 WATTS

4 FOOT 1 LAMP 48 W/FXT = 0 WATTS
2 LAMP 63 W/FXT = 126 WATTS
3 LAMP 144 W/FXT = 0 WATTS
4 LAMP 162 W/FXT = 0 WATTS

8 FOOT 2 LAMP 108 W/FXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 58 W/FXT = 0 WATTS

4 FOOT 0 1 LAMP 48 W/FXT = 0 WATTS
2 2 LAMP 63 W/FXT = 126 WATTS
0 3 LAMP 144 W/FXT = 0 WATTS
0 4 LAMP 162 W/FXT = 0 WATTS

8 FOOT 0 2 LAMP 108 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION

1712 KWH/YR
8184 MJ/YR
0.34 KW

ECO ENERGY CONSUMPTION

0 KWH/YR
0 MJ/YR
0.23 KW

NET ENERGY SAVINGS

900 MJ/YR
5.84 MEST/YR

NET DEMAND SAVINGS

NET DOLLAR SAVINGS
\$51 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7112
AREA: DAYROOMS
LAMP USE: 14
HOURS/DAY: 7
DAYS/WEEK: 1 (1-YES, 2-NO)
PEAK USE: 1
ELECTRIC COSTS:
ENERGY CHARGE: \$0.0211 PER KWH
DEMAND CHARGE: \$11.78 PER KW

BUILDING VOLTAGE: 120V

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS	LAMPS @	WATTS
52	0 WATTS	13	0 WATTS
60	0 WATTS	18	0 WATTS
75	0 WATTS	25	0 WATTS
100	0 WATTS		78 WATTS
3 LAMPS @	300 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
1528 KWH		397 KWH	
5394 MJ		1431 MJ	
BASELINE DEMAND		ECO DEMAND	
0.38 KW		0.08 KW	

NET ENERGY SAVINGS	4873 MJ/YR	NET DEMAND SAVINGS	\$31 /YR
NET ENERGY SAVINGS	3.98 MBTU/YR	NET DOLLAR SAVINGS	\$55 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR EXTERIOR LIGHTING
19 AUGUST 1994

BUILDING #:	7112	INTERIOR LIGHTING: EXIT SIGN REPLACEMENT			
		ELECTRIC COSTS:		\$0.0211 PER KWH	
		ENERGY CHARGE		\$11.78 PER KW	
		DEMAND CHARGE			
INCANDESCENT EXIT SIGNS	1	FLUORESCENT EXIT SIGNS		REPLACEMENT FIXTURE	
# EXIT SIGNS		# EXIT SIGNS		# EXIT SIGNS	1
WATTAGE	30	WATTAGE	18	WATTAGE	3
BASELINE ENERGY CONSUMPTION		203 KWH/YR		ECO ENERGY CONSUMPTION	34 KWH/YR
		946 KWH/YR			95 KWH/YR
BASELINE DEMAND		0.03 KW		ECO DEMAND	0.003 KW
NET ENERGY SAVINGS		841 KWH/YR		NET DEMAND SAVINGS	\$
NET ENERGY SAVINGS		0.31 MBTU/YR		NET DOLLAR SAVINGS	\$9

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MeansData for Lotus

Page 1

Estimate: Bldg. 7112 Date: 8 July 1994
Description: Barracks
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City Indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					4.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		1.94	\$0	\$53	\$0	\$0	\$53
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					2.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		0.52	\$0	\$14	\$0	\$0	\$14
U02 SITEWORK		3	\$0	\$67	\$0	\$0	\$67

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00		49.26
					\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	1.00	28.65	23.82	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00		52.47
					\$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE						
Unit values	1.00	50.00	27.50	0.00	1.00	EA	
Totals	1.00	\$50	\$28	\$0	0.00		77.50
					\$0		\$78
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS						
Unit values	1.40	88.00	38.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		126.50
					\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.51	84.00	41.50	0.00	4.00	EA	
Totals	6.04	\$336	\$166	\$0	0.00		125.50
					\$0		\$502
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		134.00
					\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		141.00
					\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.14	73.00	31.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		104.50
					\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8						
Unit values	1.14	86.00	31.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		117.50
					\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR						
Unit values	1.14	90.00	31.50	0.00	(qty)	EA	
					0.00		121.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	17.94
					\$0	\$0
1661388042	COMP FLUOR FIX, 3 26 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	30.50	27.50	0.00	1.00 EA	
Totals	1.00	\$31	\$28	\$0	0.00	58.00
					\$0	\$59

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	9	\$417	\$222	\$0	\$0	\$639
	ESTIMATE TOTAL	12	\$417	\$289	\$0	\$0	\$706
	SALES TAX	5.00%	\$21				
	MATL MARKUP	-40.00%	(\$167)				
	LABOR MARKUP	-13.40%		(\$39)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$271	\$250	\$0	\$0	\$521
	CONTINGENCY	10.00%					\$52
	BOND	2.50%					\$13
	PROFIT	10.00%					\$52
	JOB TOTAL						\$639

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MeansData for Lotus

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Estimate: Bldg. 7112 Date: 8 July 1994
 Description: Barracks
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UG2 SITEWORK	3	\$0	\$67	\$0	\$0	\$67
U16 ELECTRICAL	9	\$417	\$222	\$0	\$0	\$639
TOTAL	12	\$417	\$289	\$0	\$0	\$706
SALES TAX	5.00%	\$21				
MATL MARKUP	-40.00%	(\$167)				
LABOR MARKUP	-13.40%		(\$39)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$271	\$250	\$0	\$0	\$521
CONTINGENCY	10.00%					\$52
BOND	2.50%					\$13
PROFIT	10.00%					\$52
JOB TOTAL						\$639

20 AUGUST 1964

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

DATE: 7/1/63

193A 1234

WEDNESDAY

DAVID

ADULTS: 50-100 PAIRS

ELECTRIC COSTS	
ENERGY CHARGE	\$0.0211 PER KW-H
DEMAND CHARGE	\$11.78 PER KW

VIETNAMESE 072

2 FOOT 2 LAMP U 50 FEET 0 WATTS

SLYWA 0	113500	0	DR07 9
SLYWA 0	113500	0	DR07 8
SLYWA 0	113500	0	DR07 7
SLYWA 0	113500	0	DR07 6
SLYWA 0	113500	0	DR07 5
SLYWA 0	113500	0	DR07 4
SLYWA 0	113500	0	DR07 3
SLYWA 0	113500	0	DR07 2
SLYWA 0	113500	0	DR07 1

ADONIS 0013-7901(1977)90172-0

PLACEMENT/FUTURE DATA

FOUR 02 LAMP U R 58 WAFERTS 9 1947

11 FOOT	0.1 LAMP @	29 WPKT =	0 WATTS
	4.2 LAMP @	50 WPKT =	232 WATTS
	0.3 LAMP @	87 WPKT =	0.7 WATTS
	0.4 LAMP @	171 WPKT =	0.7 WATTS

1 FOOT 0 21 AMP 0 175 WERT - 0 WAYS

[illegible]

	1.30 MJYR	1.28 MJYR	NET DEMAND SAVINGS	\$16 /YR
NET ENERGY SAVINGS				
NET ENERGY SAVINGS				\$23 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING C: 7118
 AREA: DAYROOMS
 LAMP LIFE: 14
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.76 PER KW

BUILDING VOLTAGE: 120V

EXISTING INCANDESCENTS	WATTS	COY/2AGT FLUORESCENT REPLACEMENT	WATTS
3 LAMPS @ 52	156 WATTS	0 LAMPS @ 13	0 WATTS
62 LAMPS @ 60	3720 WATTS	0 LAMPS @ 18	0 WATTS
75 LAMPS @ 75	5625 WATTS	3 LAMPS @ 26	78 WATTS
80 LAMPS @ 80	6400 WATTS		
100 LAMPS @ 100	10000 WATTS		

BASELINE ENERGY CONSUMPTION 1.329 KWH
 5,904 MJ

ECO ENERGY CONSUMPTION 397 KWH
 1,431 MJ

BASELINE DEMAND 0.30 KW

ECO DEMAND

NET ENERGY SAVINGS 4.973 MJ/YR
 3.06 MBTU/YR

NET DEMAND SAVINGS \$31 /YR

NET DOLLAR SAVINGS \$55 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS:
ENERGY CHARGE 20.0211 PER KWH
DEMAND CHARGE 311.70 PER KW

BUILDING #: 7118

INCANDESCENT EXIT SIGNS # EXIT SIGNS	FLUORESCENT EXIT SIGNS # EXIT SIGNS	REPLACEMENT FIXTURE # EXIT SIGNS
1		1
WATTAGE 30	WATTAGE 19	WATTAGE 3

BASELINE ENERGY CONSUMPTION KWH/HR	ECO ENERGY CONSUMPTION KWH/HR	ECO DEMAND KW
345	26	26
946	85	85
903	883	883

NET ENERGY SAVINGS KWH/HR	NET DEMAND SAVINGS KW
851	84
6.01	89

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MeansData for Lotus

Page 1

Estimate: Bldg. 7118 Date: 8 July 1994
Description: Barracks
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					4.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		1.94	\$0	\$53	\$0	\$0	\$53
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					2.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		0.52	\$0	\$14	\$0	\$0	\$14
002 SITEWORK		3	\$0	\$67	\$0	\$0	\$67

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub Total

1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					
Unit values	0.94	26.74	22.52	0.00	(qty) Ea.	49.26
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					
Unit values	1.00	28.65	23.82	0.00	(qty) Ea.	52.47
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					
Unit values	1.00	50.00	27.50	0.00	1.00 EA	77.50
Totals	1.00	\$50	\$28	\$0	0.00 \$0	\$78
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	(qty) EA	126.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309802	REC FLUOR TROFFER 2X1' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	4.00 EA	125.50
Totals	6.04	\$336	\$166	\$0	0.00 \$0	\$502
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	(qty) EA	134.00
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	(qty) EA	141.00
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	(qty) EA	104.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	(qty) EA	117.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 19 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 3 26 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	30.50	27.50	0.00	1.00 EA	58.00
Totals	1.00	\$31	\$28	\$0	\$0	\$59

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MeansData for Lotus

Page 4

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		9	\$417	\$232	\$0	\$0	\$639
ESTIMATE TOTAL		12	\$417	\$289	\$0	\$0	\$706
SALES TAX	5.00%		\$21				
MATL MARKUP	-40.00%		(\$167)				
LABOR MARKUP	-13.40%			(\$39)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$271	\$250	\$0	\$0	\$521
CONTINGENCY	10.00%						\$52
BOND	2.50%						\$13
PROFIT	10.00%						\$52
JOB TOTAL							\$639

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MeansData for Lotus

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*****
Estimate:      Bldg. 7118      Date:      6 July 1994
Description:    Barracks
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City indx:
*****

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SUMMARY

```

*****
Manhours  Matl  Labor  Equipment  Sub  Total
*****
U02 SITEWORK      3      $0      $67      $0      $0      $67
U16 ELECTRICAL    9     $417     $222     $0      $0     $639
TOTAL             12     $417     $289     $0      $0     $706

SALES TAX          5.00%      $21
MAIL MARKUP       -40.00%    ($267)
LABOR MARKUP      -13.40%      ($39)
EQUIPT MARKUP      0.00%      $0
SUB MARKUP         0.00%      $0

TOTAL BEFORE CONTINGENC  $271     $250     $0     $521
CONTINGENCY          10.00%      $52
BOND                  2.50%      $13
PROFIT               10.00%      $32

JOB TOTAL                                     $639

```


FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7120
AREA: DAYNOONS

AREA USE:
HOURS/DAY: 1
DAYS/WEEK: 5

BUILDING VOLTAGE: 120V

ELECTRIC COSTS:
ENERGY CHARGE: 50.0211 PER KWH
DEMAND CHARGE: \$11.75 PER KW

EXISTING FIXTURE DATA

2 FOOT
2 LAMP U 96 W/FXT = 0 WATTS

4 FOOT
1 LAMP 0 48 W/FXT = 0 WATTS
2 LAMP 0 96 W/FXT = 96 WATTS
3 LAMP 0 144 W/FXT = 144 WATTS
4 LAMP 0 192 W/FXT = 192 WATTS

8 FOOT
2 LAMP 0 192 W/FXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
0 2 LAMP U 0 58 W/FXT = 0 WATTS

4 FOOT
0 1 LAMP 0 28 W/FXT = 0 WATTS
2 LAMP 0 56 W/FXT = 56 WATTS
3 LAMP 0 84 W/FXT = 84 WATTS
4 LAMP 0 112 W/FXT = 112 WATTS

8 FOOT
0 2 LAMP 0 125 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION: 123 KWH/YR
ECO ENERGY CONSUMPTION: 345 KWH/YR

BASELINE DEMAND: 4.000 MWTR
ECO DEMAND: 2.23 KW

NET ENERGY SAVINGS: 1,303 MWTR
NET ENERGY SAVINGS: 1.28 MWTR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$15 /YR
\$23 /YR

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1964

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING # 7120
AREA DAYROOMS
LAMP USE 14
HOURS/DAY 5
DAYS/WEEK --
PEAK USE 1 (1-YR, 2-MO)

ELECTRIC COSTS	\$0.0211	PER KW-HR
ENERGY CHARGE	\$11.78	PER KW
DEMAND CHARGE		

BUILDING VOLTAGE

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
52 LAMPS @	0 WATTS =	0 LAMPS @	0 WATTS =
60 LAMPS @	0 WATTS =	0 LAMPS @	0 WATTS =
75 LAMPS @	0 WATTS =	3 LAMPS @	78 WATTS =
90 LAMPS @	0 WATTS =		
100 LAMPS @	500 WATTS =		

BASELINE ENERGY CONSUMPTION	ECO ENERGY CONSUMPTION
1,000 KWH	205 KWH
1,001 MJ	1,022 MJ
0.30 KW	0.08 KW
BASELINE DEMAND	ECO DEMAND

NET ENERGY SAVIN	2,908 MJ/YR	NET DEMAND SAVINGS	\$31 A/YR
NET ENERGY SAV	2.7% BESTUVR	NET DOLLAR SAVINGS	\$48 A/YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

15 AUGUST 1984

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS:
ENERGY CHARGE \$9.02/11 PER KW-H
DEMAND CHARGE \$11.78 PER KW

BUILDING R: 714

REPLACEMENT PER
EXIT SIGNS

FLUORESCENT EXIT SIGNS
EXIT SIGNS

INCANDESCENT EXIT SIGNS
EXIT SIGNS

WATTAGE 18

WATTAGE 30

36 KW/HR
55 KW/HR
6,800 KW

240 KW/HR
50 KW/HR
6,000 KW

BASELINE ENERGY CONSUMPTION

ECO ENERGY CONSUMPTION

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

261 KW/HR
8.81 MW/HR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$4
\$9

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MeansData for Lotus

Page 1

Estimate: Bldg. 7120 Date: 8 July 1994
Description: Barracks
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					4.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		1.94	\$0	\$33	\$0	\$0	\$33
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					2.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		0.52	\$0	\$14	\$0	\$0	\$14
002 SITEWORK		3	\$0	\$67	\$0	\$0	\$67

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00		49.26
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	1.00	28.65	23.82	0.00	(qty)	Ea.	
Totals	0.00	\$0	\$0	\$0	0.00		52.47
1661307777	E.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE						
Unit values	1.00	50.00	27.50	0.00	1.00	EA	
Totals	1.00	\$50	\$28	\$0	0.00		77.50
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS						
Unit values	1.40	88.00	38.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		126.50
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.51	84.00	41.50	0.00	4.00	EA	
Totals	6.04	\$336	\$166	\$0	0.00		125.50
1661309803	REC FLUOR TROFFER 3X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		134.00
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		141.00
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.24	73.00	31.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		104.50
1661309809	SUR FLUOR 1X4' W 2 32W T8						
Unit values	1.14	86.00	31.50	0.00	(qty)	EA	
Totals	0.00	\$0	\$0	\$0	0.00		117.50
1661309810	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR						
Unit values	1.14	90.00	31.50	0.00	(qty)	EA	
					0.00		121.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUCR LAMP, 16 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty, EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUCR FIX, 3 26 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	30.50	27.50	0.00	1.00 EA	58.00
Totals	1.00	\$31	\$28	\$0	\$0	\$59

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		9	\$417	\$222	\$0	\$0	\$639
ESTIMATE TOTAL		12	\$417	\$289	\$0	\$0	\$706
SALES TAX	5.00%		\$21				
MATL MARKUP	-40.00%		(\$167)				
LABOR MARKUP	-13.40%			(\$39)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$271	\$250	\$0	\$0	\$521
CONTINGENCY	10.00%						\$52
BOND	2.50%						\$13
PROFIT	10.00%						\$52
JOB TOTAL							\$639

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MeansData for Lotus

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.....
Estimate: Bldg. 7120 Date: 8 July 1994
Description: Barracks
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:
.....

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	3	\$0	\$57	\$0	\$0	\$67
U16 ELECTRICAL	9	\$417	\$222	\$0	\$0	\$639
TOTAL	12	\$417	\$289	\$0	\$0	\$706
SALES TAX	5.00%	\$21				
MATL MARKUP	-40.00%	(\$167)				
LABOR MARKUP	-13.40%		(\$39)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$271	\$250	\$0	\$0	\$521
CONTINGENCY	10.00%					\$52
BOND	2.50%					\$13
PROFIT	10.00%					\$52
JOB TOTAL						\$639

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	7131	
AREA:	ENTRANCE BLDG	
AREA USE:		
HOURS/DAY:	12	ELECTRIC COSTS \$0.0211 PER KWH
DAYS/WEEK:	6	DEMAND CHARGE \$11.78 PER KW
BUILDING VOLTAGE:	120	

EXISTING FIXTURE DATA

2 FOOT	1 2 LAMP U @	96 W/FIXT =	96 WATTS
4 FOOT	1 LAMP @	48 W/FIXT =	0 WATTS
	2 2 LAMP @	96 W/FIXT =	732 WATTS
	3 LAMP @	144 W/FIXT =	0 WATTS
	57 4 LAMP @	168 W/FIXT =	9576 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	1 2 LAMP U @	58 W/FIXT =	58 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	0 2 LAMP @	58 W/FIXT =	5904 WATTS
	0 3 LAMP @	87 W/FIXT =	0 WATTS
	57 2 LAMP @	58 W/FIXT =	3306 WATTS
	W REFLECTOR		

8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS
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BASELINE ENERGY CONSUMPTION	61,068 KWH/YR	ECO ENERGY CONSUMPTION	31,764 KWH/YR
BASELINE DEMAND	229,995 MJ/YR	ECO DEMAND	114,035 MJ/YR
	17.04 KW		8.47 KW

NET ENERGY SAVINGS	115,068 MJ/YR	NET DEMAND SAVINGS	\$1,215 /YR
NET ENERGY SAVINGS	189.81 MESTU/YR	NET DOLLAR SAVINGS	\$1,894 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7131
AREA: RESTRROOM

LAMP USE:

HOURS/DAY: 4

DAYS/WEEK: 5

PEAK USE: 2 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENT		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	LAMPS @	WATTS =
3 LAMPS @ 52	156 WATTS	3 LAMPS @ 13	39 WATTS
3 LAMPS @ 60	180 WATTS	0 LAMPS @ 18	0 WATTS
3 LAMPS @ 75	225 WATTS	0 LAMPS @ 26	0 WATTS
3 LAMPS @ 90	270 WATTS		
3 LAMPS @ 100	300 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
187 KWH		146 MJ	
974 MJ		6.90 KW	
BASELINE DEMAND		ECO DEMAND	
0.18 KW			

NET ENERGY SAVINGS	528 MJ/YR	NET DEMAND SAVINGS	\$0 /YR
NET ENERGY SAVINGS	0.50 MBTU/YR	NET DOLLAR SAVINGS	\$3 /YR

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MeansData for Lotus

PA

Estimate: Bldg. 7131 Date: 6 July 1994
Description:
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City Indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO, 2x2, 1x4 FLUOR FIXTURES						
Unit values		0.36	0.00	10.00	0.00	1.00	10.0
Totals		0.36	\$0	\$10	\$0	\$0	\$1
0207082121	DEMO, 2x4 FLUOR FIXTURES						
Unit values		0.49	0.00	13.35	0.00	145.00	13.3
Totals		70.32	\$0	\$1,936	\$0	\$0	\$1,93
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS						
Unit values		0.26	0.00	7.10	0.00	3.00	7.1
Totals		0.77	\$0	\$21	\$0	\$0	\$2
U02 SITEWORK		72	\$0	\$1,967	\$0	\$0	\$1,96

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MeansData for Lotus

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Line #	Description					
	Manhours	Matl	Labor	Equipment	Sub	Total

1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					
Unit values	3.94	26.74	22.52	0.00	(qty) Ea.	49.2
Totals	3.00	\$0	\$0	\$0	0.00	\$
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					
Unit values	1.00	28.65	23.82	0.00	(qty) Ea.	52.4
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661307777	L.E.D. EXIT SIGN SINGLE FACE					
Unit values	1.00	185.00	27.50	0.00	(qty) EA	212.5
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					
Unit values	1.40	88.00	38.50	0.00	1.00 EA	126.5
Totals	1.40	\$88	\$39	\$0	0.00	\$12
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.51	84.00	41.50	0.00	(qty) EA	125.5
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					
Unit values	1.60	90.00	44.00	0.00	(qty) EA	134.0
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					
Unit values	1.70	94.00	47.00	0.00	0.00 EA	141.0
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					
Unit values	1.51	106.50	41.50	0.00	57.00 EA	148.0
Totals	86.07	\$6,071	\$2,366	\$0	0.00	\$8,43
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					
Unit values	1.14	73.00	31.50	0.00	(qty) EA	104.5
Totals	0.00	\$0	\$0	\$0	0.00	\$
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	(qty) EA	117.5

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T6 TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	31.50	0.00	88.00 EA	91.50
Totals	100.32	\$5,280	\$2,772	\$0	\$0	\$8,052
1661322041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661322042	COMP FLUOR FIX, 2 13 W PL. WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	3.00 EA	53.00
Totals	3.00	\$77	\$93	\$0	\$0	\$160

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MeansData for Lotus

Page

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*****
Line #      Description
-----
              Manhours  Matl    Labor  Equipment  Sub    Total
*****
U16 ELECTRICAL      191    $11,516    $5,260        $0        $0    $16,776

ESTIMATE TOTAL      263    $11,516    $7,227        $0        $0    $18,743

SALES TAX           5.00%      $576
MATL MARKUP        -40.00%    ($4,606)
LABOR MARKUP       -13.40%      ($968)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC  $7,485    $6,259        $0        $0    $13,744
CONTINGENCY          10.00%      $1,374
BCND                 2.50%      $344
PROFIT              10.00%      $1,374

JOB TOTAL                                $16,836

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MeansData for Lotus

Page

Estimate: Bldg. 7131 Date: 8 July 1994
Description:
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	72	\$0	\$1,967	\$0	\$0	\$1,967
U16 ELECTRICAL	191	\$11,516	\$5,260	\$0	\$0	\$16,776
TOTAL	263	\$11,516	\$7,227	\$0	\$0	\$18,743
SALES TAX	5.00%	\$576				
MATL MARKUP	-40.00%	(\$4,606)				
LABOR MARKUP	-13.40%		(\$968)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$7,485	\$6,259	\$0	\$0	\$13,744
CONTINGENCY	10.00%					\$1,374
BOND	2.50%					\$344
PROFIT	10.00%					\$1,374
JOB TOTAL						\$16,836

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

12 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7133
AREA: ENTIRE BLDG
AREA: 10
YOURS/DAY: 5
DAYS/WEEK: 5

ELECTRIC COSTS:
ENERGY CHARGE: 90.0211 PER KWH
DEMAND CHARGE: \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING FIXTURE DATA

2 FOOT	0 2 LAMP U	04 WFTXT =	672 WATTS
4 FOOT	1 LAMP @	40 WFTXT =	0 WATTS
	25 2 LAMP @	04 WFTXT =	2435 WATTS
	3 LAMP @	100 WFTXT =	0 WATTS
	30 4 LAMP @	100 WFTXT =	14952 WATTS
8 FOOT	2 LAMP @	180 WFTXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 WFTXT =	484 WATTS
4 FOOT	0 1 LAMP @	20 WFTXT =	0 WATTS
	25 2 LAMP @	58 WFTXT =	1632 WATTS
	0 3 LAMP @	87 WFTXT =	0 WATTS
	30 2 LAMP @	58 WFTXT =	5162 WATTS
	W REFLECTION		
8 FOOT	0 2 LAMP @	125 WFTXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	4148 KWH/YR	ECO ENERGY CONSUMPTION	13,801 KWH/YR
BASELINE DEMAND	160.003 MWTR	ECO DEMAND	68.403 MWTR
	12.06 KW		7.37 KW

NET ENERGY SAVINGS	100,830 M/HR	NET DEMAND SAVINGS	\$1,520 NTR
NET ENERGY SAVINGS	95.38 M/HR	NET DOLLAR SAVINGS	\$2,110 NTR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7133
AREA: RESTROOM

LAMP USE: 3

HOURS/DAY: 5

DAYS/WEEK: 2 (1-YES, 2-NO)

PEAK USE: 2 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARG \$11.76 PER KW

EXISTING INCANDESCENTS		WATTS =		WATTS =	
LAMPS @	52	WATTS @	6	WATTS @	26
2 LAMPS @	09	WATTS @	120	WATTS @	0
LAMPS @	73	WATTS @	0	WATTS @	0
LAMPS @	50	WATTS @	0	WATTS @	0
LAMPS @	100	WATTS @	6	WATTS @	0

COMPACT FLUORESCENT REPLACEMENT
2 LAMPS @ 13 WATTS = 26 WATTS

0 LAMPS @ 16 WATTS = 0 WATTS
0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
94 KWH	337 MJ	20 KWH	73 MJ
0.12 KW	0.12 KW	0.03 KW	0.03 KW

BASELINE DEMAND

NET ENERGY SAVINGS		NET DEMAND SAVINGS	
264 MJ/YR	8.26 MBTU/YR	\$0 /YR	\$3 /YR
NET ENERGY SAVINGS		NET DOLLAR SAVINGS	

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MeansData for Lotus

Pag

Estimate: Bldg. 7123 Date: 8 July 1994
 Description: Admin
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO. 2x2. 1x4 FLUOR FIXTURES					8.00	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	2.91	\$0	\$80	\$0	\$0	\$80	
0207082121	DEMO, 2x4 FLUOR FIXTURES					118.00	
Unit values	0.43	0.00	13.35	0.00	0.00	13.35	
Totals	57.23	\$0	\$1,575	\$0	\$0	\$1,575	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					2.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	0.52	\$0	\$14	\$0	\$0	\$14	
U02 SITEWORK	61	\$0	\$1,669	\$0	\$0	\$1,669	

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-J ACRYLIC LENS					6.00 EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	11.23	\$704	\$308	\$0	\$0		\$1,012
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					89.00 EA	
Unit values	1.51	106.50	41.50	0.00	0.00		148.00
Totals	134.39	\$9,479	\$3,694	\$0	\$0		\$13,173
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	0 00	\$0	\$0	\$0	\$0	10
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWC-PIECE REFLECTOR					
Unit values	2.14	60.00	31.50	0.00	29.00 EA	
Totals	33.06	\$2,740	\$914	\$0	0.00	91 50
					\$0	\$2, 54
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00	17 94
					\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	2.00 EA	
Totals	2.00	\$51	\$55	\$0	0.00	53 00
					\$0	\$ 06

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		181	\$11,974	\$4,971	\$0	\$0	\$16,945
ESTIMATE TOTAL		242	\$11,974	\$6,640	\$0	\$0	\$18,614
SALES TAX	5.00%		\$599				
MATL MARKUP	-40.00%		(\$4,790)				
LABOR MARKUP	-13.40%			(\$890)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$7,783	\$5,750	\$0	\$0	\$13,533
CONTINGENCY	10.00%						\$1,353
BOND	2.50%						\$338
PROFIT	10.00%						\$1,753
JOB TOTAL							\$16,578

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Estimate:      Bldg. 7133      Date:      8 July 1994
Description:   Admin
Project:      Lighting Study  Bid Date:
Location:     Ft. Campbell    Job #:
Sq. footage:   City indx:
=====

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SUMMARY

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-----
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U12 SITEWORK      61      $0      $1,669      $0      $0      $1,669
U16 ELECTRICAL    161    $11,974      $4,971      $0      $0    $16,945
TOTAL             242    $11,974      $6,640      $0      $0    $18,614

SALES TAX          5.00%      $599
MATL MARKUP       -40.00%    ($4,790)
LABOR MARKUP      -13.40%    ($890)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%
TOTAL BEFORE CONTINGENC  $7,753      $5,750      $0      $0    $13,533
CONTINGENCY        10.00%
BOND                2.50%
PROFIT             10.00%
JOB TOTAL                                     $16,578

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7148
 AREA: ENTIRE BLDG
 PRELIM: 2
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BULBING VOLTAGE: 120

ELECTRIC COSTS
 ENERGY CHARGE \$0.0211 PER KW-H
 DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 98 W/FIXT = 0 WATTS
 4 FOOT 1 LAMP @ 48 W/FIXT = 0 WATTS
 31 2 LAMP @ 04 W/FIXT = 2504 WATTS
 3 LAMP @ 144 W/FIXT = 0 WATTS
 58 4 LAMP @ 108 W/FIXT = 1624 WATTS
 8 FOOT 2 LAMP @ 108 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS
 4 FOOT 0 1 LAMP @ 28 W/FIXT = 0 WATTS
 31 1 LAMP @ 28 W/FIXT = 950 WATTS
 W/REFLECTOR
 0 3 LAMP @ 87 W/FIXT = 0 WATTS
 58 2 LAMP @ 58 W/FIXT = 5804 WATTS
 W/REFLECTOR
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 36,691 KWH/YR
 ECO ENERGY CONSUMPTION 12,083 KWH/YR
 BASELINE DEMAND 142,794 MWYR
 ECO DEMAND 49,284 MWYR
 13.07 KW 6.59 KW

NET ENERGY SAVINGS 90,408 MWYR
 NET ENERGY SAVINGS \$0.61 USD/YR
 NET DEMAND SAVINGS \$1,765 /YR
 NET DOLLAR SAVINGS \$2,313 /YR

FORT CAMPBELL LIGHTING SURVEY **ECO 1: INTERIOR / EXTERIOR LIGHTING**

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #:
 AREA:
 LAMP USE:
 HOURS/DAY:
 DAYS/WEEK:
 YEAR USE:

7149

RESTROOMS

3

5

2 (1 YES, 2 NO)

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @ 52 WATTS = 9 WATTS
 3 LAMPS @ 60 WATTS = 180 WATTS
 LAMPS @ 75 WATTS = 0 WATTS
 LAMPS @ 80 WATTS = 0 WATTS
 LAMPS @ 100 WATTS = 0 WATTS

COMPACT FLUORESCENT REPLACEMENT

3 LAMPS @ 13 WATTS = 39 WATTS
 0 LAMPS @ 0 WATTS = 0 WATTS
 0 LAMPS @ 26 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION

149 KWH
 505 MJ
 0.18 KW

ECO ENERGY CONSUMPTION

39 KWH
 119 MJ
 0.04 KW

BASELINE DEMAND

0.18 KW

ECO DEMAND

0.04 KW

NET ENERGY SAVINGS

300 MJ/YR

NET DEMAND SAVINGS

30 /YR

NET ENERGY SAVINGS

0.38 INST/YR

NET DOLLAR SAVINGS

0.2 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

12 AUGUST 1984

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.75 PER KW

7140

INCANDESCENT EXIT SIGNS
EXIT SIGNS 6
WATTAGE 30

FLUORESCENT EXIT SIGNS
EXIT SIGNS 13
WATTAGE 3

REPLACEMENT FUTURE
EXIT SIGNS 6
WATTAGE 3

158 KWH/YR
908 MJ/YR
0.62 KW

ECO ENERGY CONSUMPTION
ECO DEMAND

1,377 KWH/YR
5,678 MJ/YR
0.15 KW

BASELINE ENERGY CONSUMPTION
BASELINE DEMAND

NET ENERGY SAVINGS
NET ENERGY SAVINGS

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

5,100 MJ/YR
4.94 MJ/STUYR

NET ENERGY SAVINGS
NET ENERGY SAVINGS

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MeansData for Lotus

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Estimate: Bldg. 7149 Date: 8 July 1994
Description: Clinic
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					129.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		62.57	\$0	\$1,722	\$0	\$0	\$1,722
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					9.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		2.32	\$0	\$64	\$0	\$0	\$64
U02 SITEWORK		65	\$0	\$1,786	\$0	\$0	\$1,786

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					6.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	6.00	\$200	\$165	\$0	\$0		\$465
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	35.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					98.00 EA	
Unit values	1.81	106.50	41.50	0.00	0.00		148.00
Totals	147.98	\$10,437	\$4,067	\$0	\$0		\$14,504
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 1 32W T8 ACRYLIC LENS/W REFLECTOR					31.00 EA	
Unit values	1.14	89.00	31.50	0.00	0.00		122.50

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MeansData for Lotus

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Totals	35.34	\$2,423	\$977	\$0	\$0	\$3,457
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	(qty) EA	117.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	0.00 \$0	\$0
1661388042	COMP FLUOR FIX, 1 13 W FL					
Unit values	1.00	20.50	27.50	0.00	3.00 EA	48.00
Totals	3.00	\$52	\$83	\$0	0.00 \$0	\$145

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		193	\$13,279	\$5,292	\$0	\$0	\$18,571
ESTIMATE TOTAL		258	\$13,279	\$7,078	\$0	\$0	\$20,357
SALES TAX	5.00%		\$664				
MATL MARKUP	-40.00%		(\$5,312)				
LABOR MARKUP	-13.40%			(\$948)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$8,631	\$6,130	\$0	\$0	\$14,761
CONTINGENCY	10.00%						\$1,476
BOND	2.50%						\$369
PROFIT	10.00%						\$1,476
JOB TOTAL							\$18,082

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MeansData for Lotus

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Estimate: Bldg. 7149 Date: 4 July 1994
 Description: Clinic
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City index:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	65	\$0	\$2,786	\$0	\$0	\$1,756
016 ELECTRICAL	193	\$13,279	\$5,292	\$0	\$0	\$18,571
TOTAL	258	\$13,279	\$7,078	\$0	\$0	\$20,357
SALES TAX	5.00%	\$664				
MATL MARKUP	-40.00%	(\$5,312)				
LABOR MARKUP	-13.40%		(\$548)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$8,631	\$6,130	\$0	\$0	\$14,761
CONTINGENCY	10.00%					\$1,476
BOND	2.50%					\$369
PROFIT	10.00%					\$1,476
JOB TOTAL:						\$18,082

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7154
AREA: OFFICE AREAS
REPLACE: 8
HOURS/DAY: 8
DAYS/WEEK: 5
BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE: 30.02 ¢ PER KWH
DEMAND CHARGE: \$11.75 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 28 W/FIXT = 0 WATTS

4 FOOT 1 LAMP U 48 W/FIXT = 0 WATTS
27 2 LAMP U 84 W/FIXT = 2268 WATTS
3 LAMP U 54 W/FIXT = 0 WATTS
4 4 LAMP U 88 W/FIXT = 672 WATTS

8 FOOT 2 LAMP U 96 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 0 W/FIXT = 0 WATTS

4 FOOT 0 1 LAMP U 28 W/FIXT = 0 WATTS
27 2 LAMP U 50 W/FIXT = 1566 WATTS
0 3 LAMP U 87 W/FIXT = 0 WATTS
4 4 LAMP U 116 W/FIXT = 472 WATTS

8 FOOT 0 3 LAMP U 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 4.198 KWH/YR
ECO ENERGY CONSUMPTION 4.230 KWH/YR
BASELINE DEMAND 22.075 MVA
ECO DEMAND 2.84 KVA

NET ENERGY SAVINGS 6.764 MVA
NET ENERGY SAVINGS 6.80 MVA
NET DEMAND SAVINGS \$123 /YR
NET DOLLAR SAVINGS \$167 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7151
 AREA: OFFICESHOP AREAS
 LAMP USE: 8
 HOURS/DAY: 3
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.76 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS 80 LAMPS @ 200 WATTS = 16000 WATTS	FLUORESCENT FIXTURE REPLACEMENT - 4 FOOT 25 2 LAMP @ 58 WATT = 1334 WATTS
BASELINE ENERGY CONSUMPTION 28,764 KWH 191,334 MJ	ECO ENERGY CONSUMPTION 2,775 KWH 9,969 MJ
BASELINE DEMAND 11.66 KW	ECO DEMAND 1.33 KW

NET ENERGY SAVINGS 26,000 KWH	NET DEMAND SAVINGS \$1,762 /YR
NET ENERGY SAVINGS 88.47 MBTU/YR	NET DOLLAR SAVINGS \$2,309 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
12 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7184
AREA: RESTROOM
LAMP USE: 3
HOURS/DAY: 3
DAYS/WEEK: 2 (1-YR, 2-HO)
PEAK USE: 120
BUILDING VOLTA: 120
ELECTRIC COSTS: \$9.0211 PER KWH
ENERGY CHARGE: \$11.78 PER KW
DEMAND CHARGE: \$11.78 PER KW

EXISTING INCANDESCENT	WATTS =	0 WATTS	COMPACT FLUORESCENT REPLACEMENT	13 WATTS =	0 WATTS
LAMPS @	0 WATTS	0 WATTS	0 LAMPS @	13 WATTS =	0 WATTS
LAMPS @	0 WATTS	0 WATTS	0 LAMPS @	13 WATTS =	0 WATTS
LAMPS @	0 WATTS	0 WATTS	3 LAMPS @	39 WATTS =	78 WATTS
3 LAMPS @	240 WATTS =	240 WATTS			

BASALINE ENERGY CONSUMPTION: 288 KWH
1,088 MJ
2.88 KW
ECO ENERGY CONSUMPTION: 67 KWH
219 MJ
0.67 KW
BASIC LINE DEMAND: 2.88 KW
ECO DEMAND: 0.67 KW

NET ENERGY SAVINGS: 1,408 MJ/YR
1.38 MBTU/YR
NET DEMAND SAVINGS: \$0 /YR
NET DOLLAR SAVINGS: \$0 /YR

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MeansData for Lotus

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*****
Estimate:      Bldg. 7154      Date:      8 July 1994
Description:    Hangar
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
*****

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					31.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	15.04	\$0	\$414	\$0	\$0		\$414
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					72.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	18.58	\$0	\$511	\$0	\$0		\$511
002 SITEWORK	34	\$0	\$925	\$0	\$0		\$925

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MeansData for Lotus

Page

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00	(qty) Ea.		
Totals	0.00	\$0	\$0	\$0	0.00	49.26	\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	1.00	28.65	23.82	0.00	(qty) Ea.		
Totals	0.00	\$0	\$0	\$0	0.00	52.47	\$0
1661307001	LOW BAY, AL REFLECTOR 50W HPS						
Unit values	2.00	209.00	55.00	0.00	0.00 EA		
Totals	0.00	\$0	\$0	\$0	0.00	264.00	\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE						
Unit values	1.00	185.00	27.50	0.00	(qty) EA		
Totals	0.00	\$0	\$0	\$0	0.00	212.50	\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS						
Unit values	1.40	88.00	38.50	0.00	(qty) EA		
Totals	0.00	\$0	\$0	\$0	0.00	126.50	\$0
1661309803	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.51	84.00	41.50	0.00	(qty) EA		
Totals	0.00	\$0	\$0	\$0	0.00	125.50	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00	(qty) EA		
Totals	0.00	\$0	\$0	\$0	0.00	134.00	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00	4.00 EA		
Totals	6.80	\$376	\$138	\$0	0.00	141.00	\$564
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.14	73.00	31.50	0.00	(qty) EA		
Totals	0.00	\$0	\$0	\$0	0.00	104.50	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8						
Unit values	1.14	86.00	31.50	0.00	27.00 EA		
					0.00	117.50	

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MeansData for Lotus

Page

Totals	30.78	\$2,322	\$851	\$0	\$0	\$3 173
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W TB					
	TWO-PIECE REFLECTOR					
Unit values	1.14	60.03	31.50	0.00	23.00 EA	91.50
Totals	26.22	\$1,380	\$725	\$0	\$0	\$2,105
1661388041	COMP FLUOR LAMP, 26W TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	25.50	3.44	0.00	3.00 EA	28.94
Totals	0.38	\$77	\$10	\$0	\$0	\$87
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	(qty) EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		65	\$4,155	\$1,774	\$0	\$0	\$5,929
ESTIMATE TOTAL		99	\$4,155	\$2,699	\$0	\$0	\$6,854
SALES TAX	5.00%		\$208				
MATL MARKUP	-40.00%		(\$1,662)				
LABOR MARKUP	-13.40%			(\$362)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$2,701	\$2,337	\$0	\$0	\$5,038
CONTINGENCY	10.00%						\$504
BCND	2.50%						\$126
PROFIT	10.00%						\$504
JCB TOTAL							\$6,172

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Estimate: Bldg. 7154 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	34	\$0	\$925	\$0	\$0	\$925
016 ELECTRICAL	65	\$4,155	\$1,774	\$0	\$0	\$5,929
TOTAL	99	\$4,155	\$2,699	\$0	\$0	\$6,854
SALES TAX	5.00%	\$208				
MATL MARKUP	-40.00%	(\$1,662)				
LABOR MARKUP	-13.40%		(\$362)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$2,701	\$2,337	\$0	\$0	\$5,038
CONTINGENCY	10.00%					\$504
BOND	2.50%					\$126
PROFIT	10.00%					\$504
JCB TOTAL						\$6,172

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

ELECTRIC COSTS
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING #: 7153
AREA: OFFICE AREAS
AREA USE: 8
HOURS/DAY: 5
DAYS/WEEK: 5

BUILDING VOLTAGE: 120

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 50 W/FT = 0 WATTS

4 FOOT
0 1 LAMP @ 20 W/FT = 0 WATTS
0 2 LAMP @ 50 W/FT = 0 WATTS
0 3 LAMP @ 80 W/FT = 0 WATTS
32 2 LAMP @ 50 W/FT = 1600 WATTS
W/ REFLECTOR

8 FOOT 0 2 LAMP @ 125 W/FT = 0 WATTS

ECO ENERGY CONSUMPTION
3,000 KWH/YR
13,000 BLU/YR
9.00 KW

ECO DEMAND

NET DEMAND SAVINGS
NET DOLLAR SAVINGS
\$400 /YR
\$652 /YR

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U @ 80 W/FT = 0 WATTS

4 FOOT
1 LAMP @ 40 W/FT = 0 WATTS
2 LAMP @ 80 W/FT = 0 WATTS
3 LAMP @ 120 W/FT = 0 WATTS
32 4 LAMP @ 120 W/FT = 6300 WATTS

8 FOOT 2 LAMP @ 160 W/FT = 0 WATTS

BASELINE ENERGY CONSUMPTION
11,982 KWH/YR
49,200 BLU/YR
8.30 KW

BASELINE DEMAND

NET ENERGY SAVINGS
NET DOLLAR SAVINGS
24,300 BLU/YR
\$400 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7155
 AREA: RESTROOM/STAIRWELL
 LAMP USE: 3
 HOURS/DAY: 5
 DAYS/WEEK: 2 (1-YES, 2-NO)
 PEAK USE: 2
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.70 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS	WATTS	LAMPS	WATTS
52	0 WATTS	13	0 WATTS
00	0 WATTS	0	0 WATTS
76	0 WATTS	10	0 WATTS
00	0 WATTS	28	182 WATTS
100	700 WATTS	7	0 WATTS

BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
KWH	BTU	KWH	BTU
646	1,966	142	811
0.79 KW	0.79 KW	0.16 KW	0.16 KW

BASELINE DEMAND

NET ENERGY SAVINGS		NET DEMAND SAVINGS	
BTU/YR	BTU/YR	BTU/YR	BTU/YR
1,465	1,465	30	30
1.38	1.38	\$0	\$0

Estimate: Bldg. 7155 Date: 8 July 1994
Description: OFFICE AREA
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
020708212:	DEMO. 2x4 FLUOR FIXTURES					32.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	13.52	\$0	\$427	\$0	\$0		\$427
0207082123	DEMO. INCAND FIXTURES / EXIT SIGNS					7.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	1.81	\$0	\$50	\$0	\$0		\$50
002 SITEWORK	16	\$0	\$477	\$0	\$0		\$477

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	22.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307001	LOW BAY, AL REFLECTOR 50W HPS					0.00 EA	
Unit values	2.00	209.00	55.00	0.00	0.00		264.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 1 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					32.00 EA	
Unit values	1.51	106.50	41.50	0.00	0.00		148.00
Totals	48.32	\$3,408	\$1,328	\$0	\$0		\$4,736
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50

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Totals	0.00	\$0	SC	\$0	SC	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	0.00 EA	
Totals	0.00	\$0	\$0	\$0	0.00 SC	117.50 \$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	
Totals	0.00	\$0	SC	\$0	0.00 \$0	121.50 \$0
1661388041	COMP FLUOR LAMP, 26W TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	25.50	3.44	0.00	7.00 EA	
Totals	0.88	\$179	\$24	\$0	0.00 \$0	25.94 \$203
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	(qty) EA	
Totals	0.00	\$0	\$0	\$0	0.00 \$0	53.00 \$0

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16	ELECTRICAL	50	\$3,587	\$1,352	\$0	\$0	\$4,939
	ESTIMATE TOTAL	66	\$3,587	\$1,829	\$0	\$0	\$5,416
	SALES TAX	5.00%	\$179				
	MATL MARKUP	-40.00%	(\$1,435)				
	LABOR MARKUP	-13.40%		(\$242)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$2,332	\$1,584	\$0	\$0	\$3,915
	CONTINGENCY	10.00%					\$392
	BOND	2.50%					\$98
	PROFIT	10.00%					\$392
	JOB TOTAL						\$4,796

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MeansData for Lotus

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Estimate: Bldg. 7155 Date: 8 July 1994
 Description: OFFICE AREA
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEMORK	18	\$0	\$477	\$0	\$0	\$477
U16 ELECTRICAL	50	\$3,587	\$1,352	\$0	\$0	\$4,939
TOTAL	68	\$3,587	\$1,829	\$0	\$0	\$5,416
SALES TAX	5.00%	\$179				
MATL MARKUP	-40.00%	(\$1,435)				
LABOR MARKUP	-13.40%		(\$245)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$2,332	\$1,584	\$0	\$0	\$3,915
CONTINGENCY	10.00%					\$392
BOND	2.50%					\$98
PROFIT	10.00%					\$392
JOB TOTAL						\$4,796

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING 6: 7158
 AREA: SHOW/STORAGE AREAS
 AREA USE: 8
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 88 W/FT = 0 WATTS
 4 FOOT 1 LAMP @ 48 W/FT = 0 WATTS
 2 LAMP @ 84 W/FT = 3520 WATTS
 3 LAMP @ 144 W/FT = 0 WATTS
 4 LAMP @ 188 W/FT = 504 WATTS
 8 FOOT 2 LAMP @ 188 W/FT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0.2 LAMP U @ 56 W/FT = 0 WATTS
 4 FOOT 0.1 LAMP @ 28 W/FT = 0 WATTS
 2 LAMP @ 56 W/FT = 2136 WATTS
 3 LAMP @ 84 W/FT = 0 WATTS
 4 LAMP @ 112 W/FT = 324 WATTS
 8 FOOT 0.2 LAMP @ 125 W/FT = 0 WATTS

BASELINE ENERGY CONSUMPTION 0.436 KWH/YR
 33.966 MJ/YR
 BASELINE DEMAND 4.03 KW
 ECO ENERGY CONSUMPTION 6.579 KWH/YR
 21.563 MJ/YR
 ECO DEMAND 2.79 KW

NET ENERGY SAVINGS 10.463 MJ/YR
 NET ENERGY SAVINGS 9.92 MJ/YR
 NET DEMAND SAVINGS \$176 /YR
 NET DOLLAR SAVINGS \$337 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7156
 AREA: OFFICE AREAS
 LAMP USE: 0
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.76 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENT LAMP REPLACEMENT - 3 FOOT
 20 LAMPS @ 200 WATTS = 17000 WATTS
 30 2 LAMP @ 58 WATTS = 1740 WATTS
 BASELINE ENERGY CONSUMPTION 37,000 KWH
 131,200 MJ
 BASELINE DEMAND 17.00 KW

ECO ENERGY CONSUMPTION 2,019 KWH
 13,029 MJ
 ECO DEMAND 1.74 KW

NET ENERGY SAVINGS 120,267 MJ/YR
 NET ENERGY SAVINGS 113.58 MBTU/YR
 NET DEMAND SAVINGS \$2,270 /YR
 NET DOLLAR SAVINGS \$2,978 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7156
AREA: RESTROOM
LAMP USE: 3
HOURS/DAY: 3
DAYS/WEEK: 2 (1-YES, 2-NO)
PEAK USE: 2
BUILDING VOLTA: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING LAMPS	WATTS	EXISTING LAMPS	WATTS	EXISTING LAMPS	WATTS	EXISTING LAMPS	WATTS	EXISTING LAMPS	WATTS
3	60	3	60	3	60	3	60	3	60
3	75	3	75	3	75	3	75	3	75
3	90	3	90	3	90	3	90	3	90
3	100	3	100	3	100	3	100	3	100
3	120	3	120	3	120	3	120	3	120
3	150	3	150	3	150	3	150	3	150
3	180	3	180	3	180	3	180	3	180
3	200	3	200	3	200	3	200	3	200
3	250	3	250	3	250	3	250	3	250
3	300	3	300	3	300	3	300	3	300
3	350	3	350	3	350	3	350	3	350
3	400	3	400	3	400	3	400	3	400
3	450	3	450	3	450	3	450	3	450
3	500	3	500	3	500	3	500	3	500
3	550	3	550	3	550	3	550	3	550
3	600	3	600	3	600	3	600	3	600
3	650	3	650	3	650	3	650	3	650
3	700	3	700	3	700	3	700	3	700
3	750	3	750	3	750	3	750	3	750
3	800	3	800	3	800	3	800	3	800
3	850	3	850	3	850	3	850	3	850
3	900	3	900	3	900	3	900	3	900
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3	1900	3	1900	3	1900	3	1900	3	1900
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3	2000	3	2000	3	2000	3	2000	3	2000
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3	2100	3	2100	3	2100	3	2100	3	2100
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3	5100	3	5100	3	5100	3	5100	3	5100
3	5150	3	5150	3	5150	3	5150	3	5150
3	5200	3	5200	3	5200	3	5200	3	5200
3	5250	3	5250	3	5250	3	5250	3	5250
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3	6000	3	6000	3	6000	3	6000	3	6000
3	6050	3	6050	3	6050	3	6050	3	6050
3	6100	3	6100	3	6100	3	6100	3	6100
3	6150	3	6150	3	6150	3	6150	3	6150
3	6200	3	6200	3	6200	3	6200	3	6200
3	6250	3	6250	3	6250	3	6250	3	6250
3	6300	3	6300	3	6300	3	6300	3	6300
3	6350	3	6350	3					

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MeansData for Lotus

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Estimate: Bldg. 7156 Date: 8 July 1994
Description: Hangar
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					45.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	21.83	\$0	\$601	\$0	\$0	\$601	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					92.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	23.74	\$0	\$653	\$0	\$0	\$653	
U02 SITEMORK	46	\$0	\$1,254	\$0	\$0	\$1,254	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307001	LOW BAY, AL REFLECTOR 50W HPS					0.00 EA	
Unit values	2.00	209.00	55.00	0.00	0.00		264.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					30.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	48.30	\$2,520	\$1,245	\$0	\$0		\$3,765
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					40.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	45.60	\$3,440	\$1,260	\$0	\$0	\$4,700
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8. TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	31.50	0.00	0.00	91.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309911	SUR FLUOR 2X4' W 2 32W T8					
Unit values	1.29	95.00	35.50	0.00	2.00 EA	130.50
Totals	2.58	\$190	\$71	\$0	\$0	\$261
1661309913	SUR FLUOR 2X4' W 4 32W T8					
Unit values	1.51	117.00	41.50	0.00	3.00 EA	159.50
Totals	4.53	\$351	\$125	\$0	\$0	\$476
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	0.00	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 3 26 W PL WALL / CEILING MOUNT					
Unit values	1.00	30.50	27.50	0.00	1.00 EA	58.00
Totals	1.00	\$31	\$28	\$0	\$0	\$59

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PA:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		100	\$6,532	\$2,729	\$0	\$0	\$9,261
ESTIMATE TOTAL		146	\$6,532	\$3,983	\$0	\$0	\$10,515
SALES TAX	5.00%		\$327				
MATL MARKUP	-40.00%		(\$2,613)				
LABOR MARKUP	-13.40%			(\$534)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$4,246	\$3,449	\$0	\$0	\$7,695
CONTINGENCY	10.00%						\$770
BOND	2.50%						\$192
PROFIT	10.00%						\$770
JOB TOTAL							\$9,426

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MeansData for Lotus

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Estimate: Bldg. 7156 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UC2 SITEWORK	46	\$0	\$1,254	\$0	\$0	\$1,254
U16 ELECTRICAL	100	\$6,532	\$2,729	\$0	\$0	\$9,261
TOTAL	146	\$6,532	\$3,983	\$0	\$0	\$10,515
SALES TAX	5.00%	\$327				
MATL MARKUP	-40.00%	(\$2,613)				
LABOR MARKUP	-13.40%		(\$534)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$4,246	\$3,449	\$0	\$0	\$7,695
CONTINGENCY	10.00%					\$770
BOND	2.50%					\$192
PROFIT	10.00%					\$770
JOB TOTAL						\$9,426

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1974

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7129 OFFICE/CONF AREA
AREA: 0
FIXTURES/DAY: 0
DAYS/WEEK: 5
BUILDING VOLTAGE: 120
ELECTRIC COSTS: 30.0211 PER KWHR
ENERGY CHARGE: \$11.78 PER KW
DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 10 WFFXT = 0 WATTS
4 FOOT 1 LAMP 40 WFFXT = 0 WATTS
2 2 LAMP 80 WFFXT = 3628 WATTS
3 LAMP 144 WFFXT = 0 WATTS
2 4 LAMP 168 WFFXT = 3360 WATTS
8 FOOT 2 LAMP 160 WFFXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 56 WFFXT = 0 WATTS
4 FOOT 0 1 LAMP 28 WFFXT = 0 WATTS
42 1 LAMP 28 WFFXT = 1218 WATTS
0 3 LAMP 87 WFFXT = 0 WATTS
20 2 LAMP 56 WFFXT = 1160 WATTS
WIRE FLECTOR
8 FOOT 0 2 LAMP 125 WFFXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 4237 KWHR
ECO ENERGY CONSUMPTION 17.894 MJ/YR
BASELINE DEMAND 31.577 KW
ECO DEMAND 2.39 KW

NET ENERGY SAVINGS 31.771 MJ/YR
NET ENERGY SAVINGS 32.61 MJ/YR
NET DEMAND SAVINGS \$638 /YR
NET DOLLAR SAVINGS \$835 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

10 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7130

AREA:

LAMP USE:

HOURS/DAY

DAYS/WEK

PEAK USE

1 (1-YEAR, 2-MO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARG \$11.78 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	LAMPS @	WATTS =
50	50 WATTS	0	0 WATTS
60	60 WATTS	0	0 WATTS
75	75 WATTS	10	250 WATTS
90	90 WATTS		
100	100 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
2,000 KWH		541 KWH	
7,436 MJ		1,947 MJ	
1.00 KW		0.38 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	6,541 MJ/YR	NET DEMAND SAVINGS	\$105 /YR
NET ENERGY SAVINGS	6.25 MWH/YR	NET DOLLAR SAVINGS	\$137 /YR

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MeansData for Lotus

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*****
Estimate:  Bldg. 7159      Date:    8 July 1994
Description: OFFICE/CCNF AREA
Project:    Lighting Study  Bid Date:
Location:   Ft. Campbell   Job #:
Sq. footage:                City Indx:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
C207082121	DEMO, 2x4 FLOOR FIXTURES					62.00	
	Unit values	0.49	0.00	13.35	0.00	0.00	13.35
	Totals	30.07	\$0	\$828	\$0	\$0	\$828
C207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					10.00	
	Unit values	0.26	0.00	7.10	0.00	0.00	7.10
	Totals	2.58	\$0	\$71	\$0	\$0	\$71
U02 SITEWORK		33	\$0	\$699	\$0	\$0	\$699

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 1 32W T8 ACRYLIC LENS W REFLECTOR					42.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	63.42	\$3,528	\$1,743	\$0	\$0		\$5,271
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.73	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					20.00 EA	
Unit values	1.51	106.50	41.50	0.00	0.00		149.00
Totals	30.20	\$2,130	\$830	\$0	\$0		\$2,960
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T3 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661389040	COMP FLUOR LAMP, 26 W QUAD					
Unit values	0.50	10.50	13.75	0.00	10.00 EA	24.25
Totals	5.00	\$105	\$138	\$0	\$0	\$243
1661389041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	99	\$5,763	\$2,711	\$0	\$0	\$8,474
	ESTIMATE TOTAL	132	\$5,763	\$3,610	\$0	\$0	\$9,373
	SALES TAX	5.00%	\$288				
	MATL MARKUP	-40.00%	(\$2,305)				
	LABOR MARKUP	-13.40%		(\$484)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$3,746	\$3,126	\$0	\$0	\$6,872
	CONTINGENCY	10.00%					\$687
	BOND	2.50%					\$172
	PROFIT	10.00%					\$687
	JOB TOTAL						\$8,418

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MeansData for Lotus

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=====
Estimate:      Bldg. 7159      Date:      8 July 1994
Description:   OFFICE/CONF AREA
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell   Job #:
Sq. footage:   City Indx:
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SUMMARY

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=====
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U02 SITEWORK      33      $0      $839      $0      $0      $839
U16 ELECTRICAL    99     $5,763     $2,711     $0      $0     $8,474
TOTAL             132     $5,763     $3,610     $0      $0     $9,373

SALES TAX          5.00%      $288
MATL MARKUP       -40.00%    ($2,305)
LABOR MARKUP      -13.40%    ($494)
EQUIPT MARKUP      0.00%
SUB MARKUP         0.00%

TOTAL BEFORE CONTINGENC  $3,746     $3,126     $0      $0     $6,872
CONTINGENCY         10.00%
BOND                 2.50%
PROFIT              10.00%

JOB TOTAL                                     $8,418
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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7100
 AREA: SLEEPING AREA
 HOURS/DAY: 16
 DAY/WEEK: 7
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE: 30.0211 PER KWH
 DEMAND CHARGE: \$11.75 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 00 W/FXT = 0 WATTS
 4 FOOT 1 LAMP 0 48 W/FXT = 0 WATTS
 5 2 LAMP 0 94 W/FXT = 204 WATTS
 7 LAMP 0 144 W/FXT = 0 WATTS
 1 LAMP 0 162 W/FXT = 0 WATTS
 8 FOOT 2 LAMP 0 192 W/FXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 0 58 W/FXT = 0 WATTS
 4 FOOT 0 1 LAMP 0 29 W/FXT = 0 WATTS
 5 2 LAMP 0 58 W/FXT = 348 WATTS
 0 3 LAMP 0 87 W/FXT = 0 WATTS
 0 4 LAMP 0 116 W/FXT = 0 WATTS
 8 FOOT 0 2 LAMP 0 125 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 2.15 KWH/YR
 ECO ENERGY CONSUMPTION 2.677 KWH/YR
 BASELINE DEMAND 0.64 KW
 ECO DEMAND 0.35 KW

NET ENERGY SAVINGS 3.271 MWHR
 NET ENERGY SAVINGS 1.10 MEST/YR
 NET DEMAND SAVINGS \$22 /YR
 NET DOLLAR SAVINGS \$41 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1984

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING R: 7180
AREA: 6150 SQ. FT.
HOURS/DAY: 11
DAYS/WEEK: 7
ELECTRIC COSTS
ENERGY CHARGE: 20.0211 PER KWH
DEMAND CHARGE: \$11.76 PER KW

BUILDING VOLTAGE: 120

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U @ 50 W/FXFT = 0 WATTS
4 FOOT 1 LAMP @ 40 W/FXFT = 0 WATTS
11 2 LAMP @ 34 W/FXFT = 374 WATTS
3 LAMP @ 144 W/FXFT = 432 WATTS
4 LAMP @ 168 W/FXFT = 672 WATTS
8 FOOT 2 LAMP @ 168 W/FXFT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 50 W/FXFT = 0 WATTS
4 FOOT 0 1 LAMP @ 29 W/FXFT = 0 WATTS
11 2 LAMP @ 58 W/FXFT = 638 WATTS
3 LAMP @ 87 W/FXFT = 0 WATTS
4 LAMP @ 118 W/FXFT = 472 WATTS
8 FOOT 0 2 LAMP @ 125 W/FXFT = 0 WATTS

BASELINE ENERGY CONSUMPTION 1130 KWH/YR
ECO ENERGY CONSUMPTION 638 KWH/YR
BASELINE DEMAND 1.20 KW
ECO DEMAND 1.71 KW

NET ENERGY SAVINGS 15,268 KWH/YR
NET ENERGY SAVINGS 14,400 BBL/YR
NET DEMAND SAVINGS \$66 /YR
NET DOLLAR SAVINGS \$158 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1983

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

ROOM DRESS #: 7100
 AREA: NESTROODS/MAIP LIGHTS
 LAMP USE: 0
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 120
 BUILDING VOL TAG: 120

ELECTRIC COST:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS @	LAMPS @	WATTS @
52 LAMPS @	312 WATTS	13 LAMPS @	104 WATTS
60 LAMPS @	120 WATTS	0 LAMPS @	0 WATTS
75 LAMPS @	0 WATTS	0 LAMPS @	0 WATTS
90 LAMPS @	0 WATTS	0 LAMPS @	0 WATTS
100 LAMPS @	0 WATTS	0 LAMPS @	0 WATTS

BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
KWH	ELI	KWH	ELI
800 KWH	3.235 ELI	216 KWH	779 ELI
2.465 KW	2.43 KW	0.60 KW	0.60 KW

NET ENERGY SAVINGS		NET DEMAND SAVINGS	
KWH	ELI	KWH	ELI
2,465 KWH	2.33 ELI	2,465 KWH	2.33 ELI
2.465 KW	2.33 KW	2.465 KW	2.33 KW

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: HID LIGHTING REPLACEMENT

BUILDING #:
 AREA:
 AREA USE:
 HOURS/DAY:
 DAYS/WEEK:
 PEAK USE:
 TRUCK DAYS:
 24
 7
 1 (1-YR 2-100)

ELECTRIC COSTS:
 ENERGY CHARGE: 10.021¢ PER KWH
 DEMAND CHARGE: \$11.75 PER KW

BUILDING VOLTAGE:

EXISTING FIXTURES	WATTS	WATTS	WATTS
23 WACAND @	208	4000 WATTS	64 WATTS = 1472 WATTS
404	404	WATTS = 0 WATTS	300 WATTS = 0 WATTS
404	404	WATTS = 0 WATTS	400 WATTS = 0 WATTS

BASELINE ENERGY CONSUMPTION: 40,100 KWH
 144,000 MJ
 BASELINE DEMAND: 4.00 KW
 ECO ENERGY CONSUMPTION: 12,000 KWH
 43,200 MJ
 ECO DEMAND: 1.47 KW

NET ENERGY SAVINGS	NET DEMAND SAVINGS	NET DOLLAR SAVINGS
28,100 KWH	\$442 /YR	\$1,019 /YR
\$3,241 /YR		

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MeansData for Lotus

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Estimate: Bldg. 7160 Date: 5 July 1994
 Description: Fire Station
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					21.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	10.19	\$0	\$280	\$0	\$0	\$280	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					6.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	2.06	\$0	\$57	\$0	\$0	\$57	
0207082540	DEMO, HIGH BAY FIXTURES					23.00	
Unit values	1.00	0.00	27.50	0.00	0.00	27.50	
Totals	23.00	\$0	\$633	\$0	\$0	\$633	
UC2 SITEWORK	16	\$0	\$970	\$0	\$0	\$970	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307001	LOW BAY, AL REFLECTOR 50W HFS					23.00 EA	
Unit values	2.00	209.00	55.00	0.00	0.00		264.00
Totals	46.00	\$4,807	\$1,265	\$0	\$0		\$6,072
1661307777	E.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					27.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	25.67	\$1,428	\$706	\$0	\$0		\$2,134
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.60	50.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					4.00 EA	
Unit values	2.70	94.00	47.00	0.00	0.00		141.00
Totals	6.80	\$376	\$188	\$0	\$0		\$564
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$204	\$220	\$0	\$0	\$424

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		87	\$6,815	\$2,375	\$0	\$0	\$9,194
ESTIMATE TOTAL		123	\$6,815	\$3,349	\$0	\$0	\$10,164
SALES TAX	5.00%		\$341				
MATL MARKUP	-40.00%		(\$2,726)				
LABOR MARKUP	-13.40%			(\$449)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$4,430	\$2,900	\$0	\$0	\$7,330
CONTINGENCY	10.00%						\$733
BOND	2.50%						\$183
PROFIT	10.00%						\$733
JOB TOTAL							\$8,979

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MeansData for Lotus

Page :

Estimate: Bldg. 7163 Date: 8 July 1994
 Description: Fire Station
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	36	\$0	\$970	\$0	\$0	\$970
016 ELECTRICAL	87	\$6,815	\$2,379	\$0	\$0	\$9,194
TOTAL	123	\$6,815	\$3,349	\$0	\$0	\$10,164
SALES TAX	5.00%	\$341				
MATL MARKUP	-40.00%	(\$2,726)				
LABOR MARKUP	-13.40%		(\$449)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$4,430	\$2,900	\$0	\$0	\$7,330
CONTINGENCY	10.00%					\$733
BOND	2.50%					\$183
PROFIT	10.00%					\$733
JOB TOTAL						\$8,979

FORT CAMPBELL LIGHTING SURVEY

ECO 9: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING #: 744
AREA: ENTIRE BLDG
HOURS/DAY: 9
DAYS/WEEK: 5

BUILDING VOLTAGE: 120

REPLACEMENT FIXTURE DATA

3 FOOT	5 2 LAMP U	90 W/FXT	450 WATTS
4 FOOT	1 LAMP @	40 W/FXT	0 WATTS
	15 2 LAMP @	150 W/FXT	2250 WATTS
	3 LAMP @	144 W/FXT	0 WATTS
	64 4 LAMP @	160 W/FXT	11520 WATTS
3 FOOT	2 LAMP @	120 W/FXT	0 WATTS

BASELINE ENERGY CONSUMPTION 38,116 KWH/YR
100,137 BL/YR

BASELINE DEMAND 11.87 KW

NET ENERGY SAVINGS 71,251 BL/YR
NET ENERGY SAVINGS \$8.48 \$/YR

NET DEMAND SAVINGS \$1,213 /YR
NET DOLLAR SAVINGS \$1,636 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

15 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 704
AREA: RESTROOM

LAMP USE:

HOURS/DAY: 3

DAYS/WEEK: 5

PEAK USE: 2 (1-YR, 2-MO)

ELECTRIC COSTS:
ENERGY CHARGE: \$0.0211 PER KWH
DEMAND CHARGE: \$11.75 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS

LAMPS @	52	WATTS =	0	WATTS
1 LAMPS @	60	WATTS =	60	WATTS
LAMPS @	75	WATTS =	0	WATTS
LAMPS @	60	WATTS =	0	WATTS
LAMPS @	100	WATTS =	0	WATTS

COMPACT FLUORESCENT REPLACEMENT

1 LAMPS @	13	WATTS =	13	WATTS
0 LAMPS @	18	WATTS =	0	WATTS
0 LAMPS @	26	WATTS =	0	WATTS

BASELINE ENERGY CONSUMPTION

47 KWH
108 MJ
0.06 KW

ECO ENERGY CONSUMPTION

10 KWH
37 MJ
2.07 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS

132 MJ/YR

NET DEMAND SAVINGS

\$0 /YR

6.13 MBTU/YR

NET DOLLAR SAVINGS

\$1 /YR

FORT CAMPBELL LIGHTING SURVEY									
ECO 1: INTERIOR/EXTERIOR LIGHTING									
19 AUGUST 1994									
INTERIOR LIGHTING: EXIT SIGN REPLACEMENT									
BUILDING #:	7104	ELECTRIC COSTS:							
		ENERGY CHARGE		\$0.0211 PER KWHR					
		DEMAND CHARGE		\$11.76 PER KW					
FLUORESCENT EXIT SIGNS	# EXIT SIGNS	2	WATTAGE	30	FLUORESCENT EXIT SIGNS	# EXIT SIGNS	2	WATTAGE	3
REPLACEMENT FXTURE									
BASLINE ENERGY CONSUMPTION		528 KWH/YR	ECO ENERGY CONSUMPTION		53 KWH/YR				
		1,893 MJ/YR			189 MJ/YR				
BASLINE DEMAND		6.06 KW	ECO DEMAND		0.61 KW				
NET ENERGY SAVINGS		1,793 MJ/YR	NET DEMAND SAVINGS		\$8 /YR				
NET ENERGY SAVINGS		1.51 MCTU/YR	NET DOLLAR SAVINGS		\$18 /YR				

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*****
Estimate:      Bldg. 7164      Date:      8 July 1994
Description:    Flight Control
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City Indx:
*****

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO, 2x2, 1x4 FLUOR FIXTURES						
Unit values	0.36	0.00	10.00	0.00	5.00		
Totals	1.82	\$0	\$50	\$0	\$0		10.00
0207082121	DEMO, 2x4 FLUOR FIXTURES						
Unit values	0.49	0.00	13.35	0.00	74.00		
Totals	15.89	\$0	\$988	\$0	\$0		13.35
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS						
Unit values	0.26	0.00	7.10	0.00	3.00		
Totals	0.77	\$0	\$21	\$0	\$0		7.10
U02 SITEWORK		39	\$0	\$1,059	\$0	\$0	\$1,059

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00	(qty) Ea.		49.26
Totals	0.00	\$0	\$0	\$0	0.00 \$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	1.00	28.65	23.82	0.00	(qty) Ea.		52.47
Totals	0.00	\$0	\$0	\$0	0.00 \$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE						
Unit values	1.00	50.00	27.50	0.00	2.00 EA		77.50
Totals	2.00	\$100	\$55	\$0	0.00 \$0		\$155
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-T ACRYLIC LENS						
Unit values	2.40	88.00	38.50	0.00	5.00 EA		126.50
Totals	7.02	\$440	\$193	\$0	0.00 \$0		\$633
1661309802	REC FLUOR TROFFER 2X4' W 1 32W T8 ACRYLIC LENS W REFLECTOR						
Unit values	1.51	84.00	41.50	0.00	10.00 EA		125.50
Totals	15.10	\$140	\$415	\$0	0.00 \$0		\$1,255
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00	(qty) Ea.		134.00
Totals	0.00	\$0	\$0	\$0	0.00 \$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00	0.00 EA		141.00
Totals	0.00	\$0	\$0	\$0	0.00 \$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR						
Unit values	1.51	106.50	41.50	0.00	64.00 EA		148.00
Totals	96.64	\$6,816	\$2,656	\$0	0.00 \$0		\$9,472
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.14	73.00	31.50	0.00	(qty) Ea.		104.50
Totals	0.00	\$0	\$0	\$0	0.00 \$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8						
Unit values	1.14	86.00	31.50	0.00	(qty) Ea.		117.50
					0.00 \$0		\$0

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 13 W TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	1.00 EA	17.94
Totals	0.13	\$15	33	\$0	\$0	\$18
1661388042	COMP FLUOR FIX, 2 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	(qty) EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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Line #	Description	Manhours	Matl	Labor	Equipment	\$	Total
U16 ELECTRICAL		121	\$8,211	\$3,322	\$0	\$0	\$11,533
ESTIMATE TOTAL		160	\$8,211	\$4,381	\$0	\$0	\$12,592
SALES TAX	5.00%		\$411				
MATL MARKUP	-40.00%		(\$3,254)				
LABOR MARKUP	-13.40%			(\$587)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$5,337	\$3,794	\$0	\$0	\$9,131
CONTINGENCY	10.00%						\$913
BOND	2.50%						\$228
PROFIT	10.00%						\$913
JOB TOTAL							\$11,186

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MeansData for Lotus

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*****
Estimate:      Bldg. 7164      Date:      8 July 1994
Description:    Flight Control
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City indx:
*****

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SUMMARY

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*****
Manhours  Matl  Labor  Equipment  Sub  Total
*****
U02 SITEWORK      39      $0    $1,055      $0      $0    $1,059
U16 ELECTRICAL    121    $8,211    $3,322      $0      $0    $11,533
TOTAL             160    $8,211    $4,381      $0      $0    $12,592

SALES TAX          5.00%      $411
MATL MARKUP        -40.00%    ($3,284)
LABOR MARKUP       -13.40%      ($587)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%
                                $0
                                $0

TOTAL BEFORE CONTINGENC  $5,337    $3,794      $0      $0    $9,131
CONTINGENCY          10.00%
BOND                  2.50%
PROFIT                10.00%
                                $913
                                $228
                                $913

JOB TOTAL                                           $11,186

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7105
 AREA: ENTIRE BLDG
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 120

ELECTRIC COST: 30.0211 PER KWH
 ENERGY CHARGE: 311.78 PER KW
 DEMAND CHARGE: 311.78 PER KW

EXISTING FIXTURE DATA			
2 FOOT	2 LAMP U	98 W/FXFT =	0 WATTS
4 FOOT	1 LAMP @	48 W/FXFT =	0 WATTS
	1 LAMP @	50 W/FXFT =	50 WATTS
	2 LAMP @	144 W/FXFT =	1008 WATTS
	4 LAMP @	182 W/FXFT =	0 WATTS
8 FOOT	2 LAMP @	128 W/FXFT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FXFT =	0 WATTS
4 FOOT	0 1 LAMP @	28 W/FXFT =	0 WATTS
	1 2 LAMP @	58 W/FXFT =	58 WATTS
	1 1 LAMP @	28 W/FXFT =	283 WATTS
	W/REFLECTOR		
	0 4 LAMP @	118 W/FXFT =	0 WATTS
8 FOOT	0 2 LAMP @	125 W/FXFT =	0 WATTS

BASISLINE ENERGY CONSUMPTION	9,552 KWH/YR	ECO ENERGY CONSUMPTION	2,290 KWH/YR
BASISLINE DEMAND	34,532 BL/YR	ECO DEMAND	8,300 BL/YR
	1.18 KW		0.28 KW

NET ENERGY SAVINGS	26,323 BL/YR	NET DEMAND SAVINGS	\$118 /YR
NET ENERGY SAVINGS	24.96 \$/BL/YR	NET DOLLAR SAVINGS	\$273 /YR

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MeansData for Lotus

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Estimate: Bldg. 7165 Date: 2 July 1994
Description: Runway - Radio
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City index:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO. 2x4 FLOOR FIXTURES						
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	3.80	\$0	\$107	\$0	\$0	\$107	
002 SITEWORK	4	\$0	\$107	\$0	\$0	\$107	

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302201	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	26.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309501	REC FLUOR TROFFER 2X2' W 2 32W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.90	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 1 32W T8 ACRYLIC LENS W REFLECTOR					7.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	10.57	\$588	\$291	\$0	\$0		\$879
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					1.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	1.14	\$86	\$32	\$0	\$0		\$118
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					(qty) EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
166138041	COMP FLUOR LAMP, 18 W TWIN TUBE JLORR ASSEMBLY					
Unit values	0.13	14.80	3.44	0.00	(qty) 2A	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
166138042	COMP FLUOR FIX, 2 1/2 W PL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	2.00 2A	\$3.00
Totals	2.00	\$51	\$55	\$0	\$0	\$106

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MeansData for Lot15

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*****
Line #      Description
-----
              Manhours  Matl    Labor  Equipment  Sub    Total
-----
016 ELECTRICAL      14      $725      $379      $0      $0      $1,103

ESTIMATE TOTAL      16      $725      $485      $0      $0      $1,210

SALES TAX           5.00%      $36
MATERIAL MARKUP     -40.00%      ($290)
LABOR MARKUP        -13.40%      ($65)
EQUIPMENT MARKUP     0.00%
SUB MARKUP           0.00%

TOTAL BEFORE CONTINGENC  $471      $420      $0      $0      $891
CONTINGENCY          10.00%      $89
BOND                  2.50%      $22
PROFIT                10.00%      $89

JOB TOTAL                                $1,092

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MeansData for Lotus

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 Estimate: Bldg. 7163 Date: 2 July 1994
 Description: Runway - Radio
 Project: Lightning Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	4	\$0	\$127	\$0	\$0	\$127
006 ELECTRICAL	14	\$725	\$378	\$0	\$0	\$1,103
TOTAL	18	\$725	\$425	\$0	\$0	\$1,210
SALES TAX	5.00%	\$36				
MATL MARKUP	-40.00%	(\$290)				
LABOR MARKUP	-23.40%		(\$65)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$471	\$420	\$0	\$0	\$891
CONTINGENCY	10.00%					\$89
BOND	2.50%					\$22
PROFIT	10.00%					\$89
JOB TOTAL						\$1,092

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FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7170
 AREA: CENTRE BR BLDG
 FLOOR: 0
 DAYS: 5
 MONTHS: 1

ELLECTRIC CUSIN:
 ENERGY CHARGE — \$0.031 PER KWH
 DEMAND CHARGE — \$11.78 PER KW

BUILDING VOLTAGE 120

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 00 WFT = 0 WATTS
 4 FOOT 2 LAMP U 40 WFT = 84 WATTS
 103 2 LAMP U 84 WFT = 8432 WATTS
 3 LAMP U 144 WFT = 0 WATTS
 24 4 LAMP U 128 WFT = 6332 WATTS
 8 FOOT 2 LAMP U 160 WFT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 50 WFT = 0 WATTS
 4 FOOT 2 1 LAMP U 29 WFT = 58 WATTS
 103 1 LAMP U 29 WFT = 2997 WATTS
 WREFLECTOR
 0 3 LAMP U 87 WFT = 0 WATTS
 24 2 LAMP U 55 WFT = 1302 WATTS
 WREFLECTOR
 8 FOOT 0 2 LAMP U 125 WFT = 0 WATTS

BASELINE ENERGY CONSUMPTION 24877 KWH/YR
 ECO ENERGY CONSUMPTION 10365 KWH/YR
 BASELINE DEMAND 12.77 KW
 ECO DEMAND 4.44 KW

NET ENERGY SAVINGS 70,910 MJ/YR
 NET ENERGY SAVINGS \$1,178 /YR
 NET ENERGY SAVINGS \$1,509 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

EXTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7170
AREA: HALLWAY/RESTROOMS

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

LAMP USE: 0
HOURS/DAY: 5
DAYS/WEEK: 1 (1-YES, 2-NO)
PEAK USE: 1

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS
LAMPS @ 52 WATTS = 0 WATTS
LAMPS @ 60 WATTS = 0 WATTS
LAMPS @ 75 WATTS = 0 WATTS
LAMPS @ 90 WATTS = 0 WATTS
54 LAMPS @ 100 WATTS = 5400 WATTS

COMPACT FLUORESCENT REPLACEMENT
0 LAMPS @ 13 WATTS = 0 WATTS
0 LAMPS @ 16 WATTS = 0 WATTS
54 LAMPS @ 26 WATTS = 1404 WATTS

BASELINE ENERGY CONSUMPTION 12,036 KWH
25,000 MJ

ECO ENERGY CONSUMPTION 3,265 KWH
19,827 MJ

ECO DEMAND 1.00 KW

NET ENERGY SAVINGS 33,663 MJ/YR
31.90 MBTU/YR

NET ENERGY SAVINGS \$565 /YR
NET ENERGY SAVINGS \$762 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS:
 ENERGY CHARGE 80.0211 PER KWHR
 DEMAND CHARGE \$11.78 PER KW

BUILDING # 7179

INCANDESCENT EXIT SIGNS
 # EXIT SIGNS 10
 WATTAGE 30
 REPLACEMENT FIXTURE
 # EXIT SIGNS 10
 WATTAGE 3

FLUORESCENT EXIT SIGNS
 # EXIT SIGNS 10
 WATTAGE 16

263 KWH/YR
 908 MJ/YR
 0.03 KW

ECO ENERGY CONSUMPTION

2.49 KWH/YR
 8.91 MJ/YR
 0.35 KW

BASELINE ENERGY CONSUMPTION

ECO DEMAND

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

8.515 MJ/YR
 8.87 MJ/YR

8.515 MJ/YR
 8.87 MJ/YR

\$38 /YR
 \$88 /YR

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MeansData for Lotus

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Estimate: Bldg. 7170 Date: 6 July 1994
Description: Admin
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207002121	DEMO, 2x4 FLUOR FIXTURES					129.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		62.57	\$0	\$1,722	\$0	\$0	\$1,722
0207002123	DEMO, INCAND FIXTURES / EXIT SIGNS					64.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		16.51	\$0	\$454	\$0	\$0	\$454
002 SITEWORK		80	\$0	\$2,176	\$0	\$0	\$2,176

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 32W LAMP R S					2.00 Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	1.88	\$53	\$45	\$0	\$0		\$98
1661302300	SUR FLUOR STRIP 4' W 2 32W LAMP R S					(qty) Ea.	
Unit values	1.00	26.65	23.52	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					10.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	10.00	\$500	\$275	\$0	\$0		\$775
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309502	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	12.50	0.00	0.00		129.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					24.00 EA	
Unit values	1.51	106.50	42.50	0.00	0.00		148.00
Totals	36.24	\$2,556	\$996	\$0	\$0		\$3,552
1661309807	REC FLUOR TROFFER 1X4' W 1 32W T8 ACRYLIC LENS					95.00 EA	
Unit values	1.14	80.00	31.50	0.00	0.00		111.50
Totals	108.30	\$7,600	\$2,993	\$0	\$0		\$10,593
1661309909	SUR FLUOR 1X4' W 2 32W T8					8.00 EA	
Unit values	1.14	93.00	31.50	0.00	0.00		124.30

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MeansData for Lotus

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Totals	9.12	\$744	\$252	\$0	\$0	\$996
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA 0.00	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA 0.00	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	54.00 EA 0.00	53.00
Totals	54.00	\$1,377	\$1,485	\$0	\$0	\$2,862

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		220	\$12,830	\$6,046	\$0	\$0	\$18,876
ESTIMATE TOTAL		300	\$12,830	\$8,222	\$0	\$0	\$21,052
SALES TAX	5.00%		\$642				
MATL MARKUP	-40.00%		(\$5,132)				
LABOR MARKUP	-13.40%			(\$1,102)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$8,340	\$7,120	\$0	\$0	\$15,460
CONTINGENCY	10.00%						\$1,546
BOND	2.50%						\$386
PROFIT	10.00%						\$1,546
JOB TOTAL							\$18,938

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MeansData for Lotus

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Estimate: Bldg. 7170 Date: 0 July 1994
 Description: Admin
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UG2 SITEWORK	80	\$0	\$2,176	\$0	\$0	\$2,176
UG6 ELECTRICAL	220	\$12,830	\$6,046	\$0	\$0	\$18,876
TOTAL	300	\$12,830	\$8,222	\$0	\$0	\$21,052
SALES TAX	5.00%	\$642				
MATL MARKUP	-40.00%	(\$5,132)				
LABOR MARKUP	-13.40%		(\$1,102)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$8,340	\$7,120	\$0	\$0	\$15,460
CONTINGENCY	10.00%					\$1,546
BOND	2.50%					\$386
PROFIT	10.00%					\$1,546
JOB TOTAL						\$18,938

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7176 SHOP/OFFICE
AREA: 8
HOURS/DAY: 8
DAYS/WEEK: 5
BUILDING VOLTAGE: 120
ELECTRIC COSTS:
ENERGY CHARGE: \$0.0211 PER KWH
DEMAND CHARGE: \$11.76 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U @ 0 WATTS
4 FOOT 1 LAMP @ 40 WATT = 0 WATTS
40 2 LAMP @ 40 WATT = 320 WATTS
4 3 LAMP @ 120 WATT = 504 WATTS
4 LAMP @ 152 WATT = 0 WATTS
8 FOOT 2 LAMP @ 150 WATT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 0 WATTS
4 FOOT 0 1 LAMP @ 22 V-WATT = 0 WATTS
40 2 LAMP @ 50 WATT = 2320 WATTS
4 3 LAMP @ 87 WATT = 348 WATTS
0 4 LAMP @ 115 WATT = 0 WATTS
8 FOOT 0 2 LAMP @ 125 WATT = 0 WATTS

BASELINE ENERGY CONSUMPTION 8.037 KWH/YR ECO ENERGY CONSUMPTION 5.549 KWH/YR

BASELINE DEMAND 24.934 BL/YR ECO DEMAND 19.978 BL/YR

NET ENERGY SAVINGS 8.956 BL/YR
NET ENERGY SAVINGS 8.48 MBTUYR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$169 /YR
\$222 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUG/SEPT 1974

INTERIOR LIGHTING: EXIT SIGNS REPLACEMENT

BUILDING #: 7176
 EL/CIRCU COSTS: \$10211 PER HOUR
 ENERGY CHANGE: \$1178 PER KW
 DEMAND CHANGE

INCANDESCENT EXIT SIGNS
 # EXIT SIGNS 3
 WATTAGE 18
 REPLACEMENT FIXTURE
 # EXIT SIGNS 3
 WATTAGE 3

BASELINE ENERGY CONSUMPTION
 708 KWH/YR
 2.839 MJ/YR
 0.09 KW
 ECO ENERGY CONSUMPTION
 284 MJ/YR
 0.01 KW

NET ENERGY SAVINGS
 2.554 MJ/YR
 NET DEMAND SAVINGS
 2.43 MJ/YR
 NET DOLLAR SAVINGS
 \$11 /YR
 \$28 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING NO LIGHTING REPLACEMENT

BUILDING R: 7176
 AREA: SHOP
 AREA USE: 0
 PEAK USE: 1 (1-YES 2-NO)

ELECTRIC COSTS: 30.0211 PER KWH
 ENERGY CHARGE: 311.28 PER KWH
 DEMAND CHARGE: 311.28 PER KWH

BUILDING VOLTAGE: 277

EXISTING FIXTURES
 30 100W @ 1000 WATTS
 40 100W @ 1000 WATTS
 1075 100W @ 1000 WATTS

REPLACEMENT FIXTURES
 30 100W @ 1000 WATTS
 40 100W @ 1000 WATTS
 1075 100W @ 1000 WATTS

BASELINE ENERGY CONSUMPTION

22.38 KWH
 31,006 MJ
 19.83 KW

ECO ENERGY CONSUMPTION

19.275 KWH
 26,991 MJ
 4.9 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS
 NET ENERGY SAVINGS

44,194 MJ/YR
 40.80 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$833 /YR
 \$1,091 /YR

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MeansData for Lotus

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Estimate: Bldg. 7176 Date: 8 July 1994
 Description: SHOP/OFFICE
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Index:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLOOR FIXTURES					44.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	21.34	\$0	\$587	\$0	\$0	\$587	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					3.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	0.77	\$0	\$21	\$0	\$0	\$21	
0207082540	DEMO, HIGH BAY FIXTURES					58.00	
Unit values	1.00	0.00	27.50	0.00	0.00	27.50	
Totals	58.00	\$0	\$1,595	\$0	\$0	\$1,595	
UCC SITEWORK	\$1	\$0	\$2,203	\$0	\$0	\$2,203	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 2 40W LAMP R S					0.00 Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	22.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307001	LOW BAY, AL REFLECTOR 50W HPS					38.00 EA	
Unit values	2.00	209.00	55.00	0.00	0.00		264.00
Totals	76.00	\$7,942	\$2,090	\$0	\$0		\$10,032
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					3.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	3.00	\$150	\$83	\$0	\$0		\$233
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					4.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	6.40	\$360	\$176	\$0	\$0		\$536
1661309804	REC FLUOR TROFFER 3X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.75	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309900	SUR FLUOR 1X4' W 2 32W T8					0.00 EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	0.00	\$0	SC	\$0	\$0	SC
1661309910	INDUSTRIAL FLOOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	32.50	0.00	40.00 EA	92.50
Totals	45.60	\$2,400	\$1,260	\$0	\$0	\$3,660
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	16.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	SC	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W FL WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	0.00 EA	53.00
Totals	0.00	\$0	SC	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	131	\$10,852	\$3,609	\$0	\$0	\$14,461
	ESTIMATE TOTAL	212	\$10,852	\$5,812	\$0	\$0	\$16,664
	SALES TAX	5.00%	\$543				
	MATL MARKUP	-40.00%	(\$4,341)				
	LABOR MARKUP	-13.40%		(\$779)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$7,054	\$5,033	\$0	\$0	\$12,087
	CONTINGENCY	10.00%					\$1,209
	BOND	2.50%					\$302
	PROFIT	10.00%					\$1,209
	JOB TOTAL						\$14,807

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MeansData for Lotus

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Estimate: Bldg. 7176 Date: 8 July 1994
 Description: SHOP/OFFICE
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UC2 SITEWORK	8:	\$0	\$2,203	\$0	\$0	\$2,203
U16 ELECTRICAL	131	\$10,852	\$3,609	\$0	\$0	\$14,461
TOTAL	212	\$10,852	\$5,812	\$0	\$0	\$16,664
SALES TAX	5.00%	\$543				
MATL MARKUP	-40.00%	(\$4,341)				
LABOR MARKUP	-13.40%		(\$779)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$7,054	\$5,033	\$0	\$0	\$12,087
CONTINGENCY	10.00%					\$1,209
BOND	2.50%					\$302
PROFIT	10.00%					\$1,209
JOB TOTAL						\$14,807

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1984

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7179
 AREA: ENTIRE BLDG
 AREA USE: 10
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 120V

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 98 WFFXT = 0 WATTS
 4 FOOT 1 LAMP @ 48 WFFXT = 0 WATTS
 23 2 LAMP @ 81 WFFXT = 8972 WATTS
 3 LAMP @ 144 WFFXT = 0 WATTS
 15 4 LAMP @ 168 WFFXT = 2016 WATTS
 8 FOOT 2 LAMP @ 98 WFFXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 WFFXT = 0 WATTS
 4 FOOT 0 1 LAMP @ 29 WFFXT = 0 WATTS
 23 1 LAMP @ 29 WFFXT = 7407 WATTS
 WAREFLECTOR
 0 3 LAMP @ 87 WFFXT = 0 WATTS
 16 2 LAMP @ 58 WFFXT = 828 WATTS
 WAREFLECTOR
 8 FOOT 0 2 LAMP @ 125 WFFXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 21,178 KWH/YR
 ECO ENERGY CONSUMPTION 4,877 KWH/YR
 BASELINE DEMAND 8.66 KW
 ECO DEMAND 3.34 KW

NET ENERGY SAVINGS 59,292 \$/YR
 NET ENERGY SAVINGS \$6.11 \$/SQUYR

NET DEMAND SAVINGS \$894 /YR
 NET DOLLAR SAVINGS \$1,261 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7078
 AREA: RESTROOMS
 LAMP USE: 3
 HOURS/DAY: 5
 DAYS/WEEK: 2 (1-YES, 2-NO)
 PEAK USE: 120
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.76 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	0 LAMPS @	13 WATTS =
52	0 WATTS	0 LAMPS @	0 WATTS
60	0 WATTS	5 LAMPS @	130 WATTS
75	0 WATTS		
50	450 WATTS		
100	0 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
351 KWH		101 KWH	
9,268 MJ		265 MJ	
0.45 KW		0.13 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	899 MJ/YR	NET DEMAND SAVINGS	\$0 /YR
NET ENERGY SAVINGS	0.85 MBTU/YR	NET DOLLAR SAVINGS	\$5 /YR

FORT CAMPBELL LIGHTING SURVEY									
ECO 1: INTERIOR/EXTERIOR LIGHTING									
19 AUGUST 1984									
INTERIOR LIGHTING: EXIT SIGN REPLACEMENT									
BUILDING #:	7079	ELECTRIC COSTS:		50.0211 PER KWH					
		ENERGY CHARGE		511.76 PER KW					
		DEMAND CHARGE							

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MeansData for Lotus

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=====
Estimate:      Bldg. 7179      Date:      8 July 1994
Description:   Control Group
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City index:
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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207092121	DEMO, 2x4 FLUOR FIXTURES					99.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	43.02	\$0	\$1,322	\$0	\$0		\$1,322
0207092123	DEMO, INCAND FIXTURES / EXIT SIGNS					9.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	2.32	\$0	\$64	\$0	\$0		\$64
U02 SITEWORK	51	\$0	\$1,386	\$0	\$0		\$1,386

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	L.E.D. EXIT SIGN RETROFIT KIT SINGLE FACE					4.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	4.00	\$200	\$110	\$0	\$0		\$310
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					16.00	
Unit values	1.51	106.50	41.50	0.00	0.00		148.00
Totals	24.16	\$1,704	\$664	\$0	\$0		\$2,368
1661309907	REC FLUOR TROFFER 1X4' W 1 32W T8 ACRYLIC LENS					83.00 EA	
Unit values	1.14	80.00	31.50	0.00	0.00		111.50
Totals	94.62	\$6,640	\$2,615	\$0	\$0		\$9,255
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	0.00	SC	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
Unit values	1.14	90.00	31.50	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	121.50
					\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
Unit values	0.13	14.50	3.44	0.00	(qty)	EA
Totals	0.00	\$0	\$0	0.00	0.00	17.94
				SC	SC	\$0
1661388042	COMP FLUOR FIX, 2 13 W FL					
Unit values	1.00	25.50	27.50	0.00	5.00	EA
Totals	5.00	\$128	\$138	0.00	0.00	53.00
				SC	\$0	\$256

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
116	ELECTRICAL	126	\$8,672	\$3,527	\$0	\$0	\$12,199
	ESTIMATE TOTAL	179	\$8,672	\$4,913	\$0	\$0	\$12,565
	SALES TAX	5.00%	\$434				
	MATL MARKUP	-40.00%	(\$3,469)				
	LABOR MARKUP	-13.40%		(\$658)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$5,637	\$4,255	\$0	\$0	\$9,891
	CONTINGENCY	10.00%					\$989
	BOND	2.50%					\$247
	PROFIT	10.00%					\$989
	JOB TOTAL						\$12,117

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MeansData for Lotus

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Estimate: Bldg. 7179 Date: 8 July 1994
 Description: Control Group
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UT2 SITEWORK	51	\$0	\$1,386	\$0	\$0	\$1,386
U14 ELECTRICAL	128	\$8,672	\$3,527	\$0	\$0	\$12,199
TOTAL	179	\$8,672	\$4,913	\$0	\$0	\$13,585
SALES TAX	5.00%	\$434				
MATL MARKUP	-40.00%	(\$3,469)				
LABOR MARKUP	-13.40%		(\$658)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$5,637	\$4,255	\$0	\$0	\$9,892
CONTINGENCY	10.00%					\$989
BOND	2.50%					\$247
PROFIT	10.00%					\$989
JOB TOTAL						\$12,111

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7206
 AREA: ENTIRE BLDG
 AREA USE: 10
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.76 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 88 W/FIXT = 0 WATTS
 4 FOOT 15 1 LAMP @ 45 W/FIXT = 675 WATTS
 113 2 LAMP @ 90 W/FIXT = 10170 WATTS
 2 3 LAMP @ 135 W/FIXT = 270 WATTS
 4 LAMP @ 180 W/FIXT = 0 WATTS
 8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS
 4 FOOT 15 1 LAMP @ 29 W/FIXT = 435 WATTS
 113 2 LAMP @ 59 W/FIXT = 6554 WATTS
 2 3 LAMP @ 87 W/FIXT = 174 WATTS
 0 4 LAMP @ 118 W/FIXT = 0 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 25,993 KWH/YR
 ECO ENERGY CONSUMPTION 18,824 KWH/YR
 BASELINE DEMAND 11.12 KW
 ECO DEMAND 7.16 KW

NET ENERGY SAVINGS 36,993 MBTU/YR
 NET ENERGY SAVINGS 35.66 MBTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$558 /YR
 \$775 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 7208

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.76 PER KW

INCANDESCENT EXIT SIGNS
EXIT SIGNS 10
WATTAGE 30

FLUORESCENT EXIT SIGNS
EXIT SIGNS 10
WATTAGE 18

REPLACEMENT FIXTURE
EXIT SIGNS 10
WATTAGE 3

BASELINE ENERGY CONSUMPTION
1,577 KWH/YR
5,976 MJ/YR
6.18 KW

ECO ENERGY CONSUMPTION
383 KWH/YR
946 MJ/YR
0.87 KW

NET ENERGY SAVINGS
4,736 MJ/YR
4.48 MBTU/YR

NET DEMAND SAVINGS
\$21 /YR

NET ENERGY SAVINGS
4,736 MJ/YR
4.48 MBTU/YR

NET DEMAND SAVINGS
\$49 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

BUILDING #: 7200
 AREA: HANGAR AND SHOP BAYS
 AREA USE: 10
 HOURS/DAY: 5
 DAYS/WEEK: 5 (1-VFS, 2-MO)
 PEAK USE: 1

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURES		REPLACEMENT FIXTURES	
INCAND @	WATTS =	JPS @	WATTS =
20 MV @	454	20 MV @	300
42 MV @	1075	42 MV @	460
	15150 WATTS		19370 WATTS
			0 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
143,998 KWH		65,832 KWH	
807,593 MJ		238,995 MJ	
54.23 KW		25.32 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	270,898 MJ/YR	NET DEMAND SAVINGS	\$4,087 /YR
NET ENERGY SAVINGS	266.47 MBTU/YR	NET DOLLAR SAVINGS	\$5,673 /YR

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MeansData for Lotus

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Estimate: Bldg. 7206 Date: 5 July 1994
Description: hangar
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					130.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	63.05	\$0	\$1,736	\$0	\$0		\$1,736
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					10.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	2.58	\$0	\$71	\$0	\$0		\$71
0207082540	DEMO, HIGH BAY FIXTURES					62.00	
Unit values	1.00	0.00	27.50	0.00	0.00		27.50
Totals	62.00	\$0	\$1,705	\$0	\$0		\$1,705
US2 SITEWORK	126	\$0	\$3,512	\$0	\$0		\$3,512

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 2 32W LAMP R S					15.00 Ea.	
Unit values	0.94	26.74	23.52	3.00	0.00		49.26
Totals	14.12	\$401	\$325	\$0	\$0		\$739
1661302300	SUR FLUOR STRIP 4' W 2 32W LAMP R S					30.00 Ea.	
Unit values	1.00	28.65	23.62	3.00	0.00		52.47
Totals	30.00	\$860	\$714	\$0	\$0		\$1,574
1661304291	HIGH BAY, AL REFLECTOR 400W MH					42.00 EA	
Unit values	3.48	295.00	95.50	0.00	0.00		390.50
Totals	146.08	\$12,390	\$4,011	\$0	\$0		\$16,401
1661304292	HIGH BAY, AL REFLECTOR 250W MH					20.00 EA	
Unit values	3.48	243.00	95.50	0.00	0.00		338.50
Totals	69.56	\$4,860	\$1,910	\$0	\$0		\$6,770
1661307777	L.E.D. EXIT SIGN SINGLE FACE					10.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		\$0
Totals	10.00	\$500	\$275	\$0	\$0		\$5
1661309801	REC FLUOR TROFFER 2X2' W 2 32W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126
Totals	0.00	\$0	\$0	\$0	\$0		
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					2.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	3.20	\$180	\$88	\$0	\$0		\$268
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					83.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50

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MeansData for Lotus

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Totals	94.62	\$6,059	\$2,615	\$0	\$0	\$8,674
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	66.00	31.50	0.00	(qty) EA	117.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	221.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661399041	COMP FLUOR LAMP, 16 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	368	\$25,250	\$9,951	\$0		\$35,201
	ESTIMATE TOTAL	496	\$25,250	\$13,443	\$0	\$0	\$38,713
	SALES TAX	5.00%	\$1,263				
	MATL MARKUP	-40.00%	(\$10,100)				
	LABOR MARKUP	-13.40%		(\$1,824)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$16,413	\$11,659	\$0	\$0	\$28,071
	CONTINGENCY	10.00%					\$2,807
	BOND	2.50%					\$702
	PROFIT	10.00%					\$2,807
	JOB TOTAL						\$34,388

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MeansData for Lotus

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Estimate: Bldg. 7206 Date: 8 July 1994
 Description: hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	128	\$0	\$3,512	\$0	\$0	\$3,512
U16 ELECTRICAL	368	\$25,250	\$9,951	\$0	\$0	\$35,201
TOTAL	496	\$25,250	\$13,463	\$0	\$0	\$38,713
SALES TAX	5.00%	\$1,263				
MATL MARKUP	-40.00%	(\$10,100)				
LABOR MARKUP	-13.40%		(\$1,804)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$16,413	\$11,659	\$0	\$0	\$28,071
CONTINGENCY	10.00%					\$2,807
BOND	2.50%					\$702
PROFIT	10.00%					\$2,807
JOB TOTAL						\$34,388

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7208
AREA: ENTIRE BLDG
HOURS/DAY: 10
DAYS/WEEK: 5
BUILDING VOLTAGE: 277

ELECTRIC COSTS
ENERGY CHARGE: 90.0211 PER KWH
DEMAND CHARGE: \$11.76 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 98 W/FIXT = 0 WATTS
4 FOOT 1 LAMP @ 48 W/FIXT = 0 WATTS
160 2 LAMP @ 84 W/FIXT = 13440 WATTS
1 3 LAMP @ 128 W/FIXT = 128 WATTS
4 LAMP @ 192 W/FIXT = 0 WATTS
8 FOOT 2 LAMP @ 180 W/FIXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FIXT = 0 WATTS
4 FOOT 0 1 LAMP @ 20 W/FIXT = 0 WATTS
160 2 LAMP @ 54 W/FIXT = 11020 WATTS
1 3 LAMP @ 87 W/FIXT = 1218 WATTS
4 LAMP @ 118 W/FIXT = 0 WATTS
8 FOOT 0 2 LAMP @ 125 W/FIXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 44,083 KWH/YR
BASELINE DEMAND 185,097 BL/YR
ECO ENERGY CONSUMPTION 37,819 KWH/YR
ECO DEMAND 72.26 KW

NET ENERGY SAVINGS \$1,340 BL/YR
NET ENERGY SAVINGS 43.67 MWH/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS \$778 /YR
\$1,076 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7208
AREA: RESTROOMS

LAMP USE: 3
HOURS/DAY: 3
DAYS/WEEK: 2 (1-YES, 2-NO)
PEAK USE: 2

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.76 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	LAMPS @	WATTS =
4 LAMPS @ 52	WATTS = 208	0 LAMPS @ 13	WATTS = 0
4 LAMPS @ 60	WATTS = 240	0 LAMPS @ 15	WATTS = 0
4 LAMPS @ 75	WATTS = 300	0 LAMPS @ 26	WATTS = 0
4 LAMPS @ 90	WATTS = 360		
4 LAMPS @ 100	WATTS = 400		

BASELINE ENERGY CONSUMPTION	187 KWH	ECO ENERGY CONSUMPTION	41 KWH
BASELINE DEMAND	674 MJ	ECO DEMAND	146 MJ
	6.24 KW		0.95 KW

NET ENERGY SAVINGS	538 MJ/YR	NET DEMAND SAVINGS	\$0 /YR
NET ENERGY SAVINGS	0.50 MBTU/YR	NET DOLLAR SAVINGS	\$3 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7238

AREA: OFFICE

LAMP USE:

HOURS/DAY: 10

DAYS/WRK: 5

PEAK USE: 1 (1-YES 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:

ENERGY CHARGE: \$0.0211 PER KWH

DEMAND CHARGE: \$11.78 PER KW

EXISTING INCANDESCENTS

2 LAMPS @

405 WATTS =

810 WATTS

FLUORESCENT FIXTURE REPLACEMENT

1 1/2 LAMP @

58 WATTS

BASELINE ENERGY CONSUMPTION

3,768 KWH

7,582 MJ

8.81 KW

ECO ENERGY CONSUMPTION

157 KWH

343 MJ

0.06 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS

NET ENERGY SAVINGS

7,839 MJ/YR

6.67 MBTU/YR

NET DEMAND SAVINGS

NET DOLLAR SAVINGS

\$106 /YR

\$148 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

BUILDING #: 7208
 AREA: HANGAR BAY/STORAGE
 AREA USE: 10
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.75 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURES	WATTS =	0 WATTS	REPLACEMENT FIXTURES	WATTS =	0 WATTS
200	WATTS =	0 WATTS	04	WATTS =	0 WATTS
454	WATTS =	12712 WATTS	300	WATTS =	8400 WATTS
1075	WATTS =	103200 WATTS	463	WATTS =	44160 WATTS

BASELINE ENERGY CONSUMPTION 307,371 KWH
 1,044,936 MJ
 115.91 KW
 ECO ENERGY CONSUMPTION 138,856 KWH
 491,962 MJ
 52.56 KW

BASELINE DEMAND

NET ENERGY SAVINGS	NET DEMAND SAVINGS	NET DEMAND SAVINGS
692,976 MJ/YR	NET DEMAND SAVINGS	\$8,955 /YR
662.91 MBTU/YR	NET DOLLAR SAVINGS	\$12,431 /YR

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MeansData for Lotus

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Estimate: Bldg. 7206 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207092121	DEMO, 2x4 FLUOR FIXTURES					204.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	98.94	\$0	\$2,723	\$0	\$0		\$2,723
0207092123	DEMO, INCAND FIXTURES / EXIT SIGNS					6.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	1.55	\$0	\$43	\$0	\$0		\$43
0207092540	DEMO, HIGH BAY FIXTURES					124.00	
Unit values	1.00	0.00	27.50	0.00	0.00		27.50
Totals	124.00	\$0	\$3,410	\$0	\$0		\$3,410
UC2 SITEWORK	225	\$0	\$6,176	\$0	\$0		\$6,176

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00	49.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	29.65	23.82	0.00	0.00	52.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661304291	HIGH BAY, AL REFLECTOR 400W MH					96.00 EA	
Unit values	3.48	295.00	95.50	0.00	0.00	390.	
Totals	333.89	\$28,320	\$9,168	\$0	\$0	\$37,4	
1661304292	HIGH BAY, AL REFLECTOR 250W MH					28.00 EA	
Unit values	3.48	243.00	95.50	0.00	0.00	338.	
Totals	97.38	\$6,804	\$2,674	\$0	\$0	\$9,4	
1661307777	L.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	165.00	27.50	0.00	0.00	212.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00	126.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00	125.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					16.00 EA	
Unit values	1.60	90.00	44.00	0.00	0.00	134.	
Totals	22.40	\$1,260	\$616	\$0	\$0	\$1,8	
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00	141.	
Totals	0.00	\$0	\$0	\$0	\$0		
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					190.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00	104.	

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Totals	216.60	\$13,870	\$5,955	\$0	\$0	\$19,815
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	\$6.00	\$1.50	0.00	(qty) EA	117.1
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	\$7.00	\$1.50	0.00	1.00 EA	\$5.1
Totals	1.14	\$57	\$32	\$0	\$0	\$0
1661309912	SUR FLUOR 2X4' W 2 32W T8					
Unit values	1.43	\$15.00	\$8.50	0.00	(qty) EA	153.
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309941	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	\$4.50	\$3.44	0.00	(qty) EA	17.1
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309942	COMP FLUOR FIX, 2 13 W PL WALL / CEILING MOUNT					
Unit values	1.00	\$25.50	\$27.50	0.00	4.00 EA	\$3.1
Totals	4.00	\$102	\$110	\$0	\$0	\$2

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	676	\$50,413	\$18,555	\$0	\$0	\$68,998
	ESTIMATE TOTAL	901	\$50,413	\$24,761	\$0	\$0	\$75,174
	SALES TAX	5.00%	\$2,511				
	MATL MARKUP	-40.00%	(\$20,165)				
	LABOR MARKUP	-13.40%		\$3,318			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$32,768	\$21,443	\$0	\$0	\$54,211
	CONTINGENCY	10.00%					\$5,421
	BOND	2.50%					\$1,355
	PROFIT	10.00%					\$5,421
	JOB TOTAL						\$66,409

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MeansData for Lotus

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Estimate: Bldg. 720# Date: 8 July 1984
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	225	\$0	\$5,176	\$0	\$0	\$5,176
U16 ELECTRICAL	676	\$50,413	\$15,585	\$0	\$0	\$68,998
TOTAL	901	\$50,413	\$24,761	\$0	\$0	\$75,174
SALES TAX	5.00%	\$2,521				
MATL MARKUP	-40.00%	(\$20,165)				
LABOR MARKUP	-13.40%		(\$3,318)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$32,768	\$21,443	\$0	\$0	\$54,211
CONTINGENCY	10.00%					\$5,421
BOND	2.50%					\$1,355
PROFIT	10.00%					\$5,421
JOB TOTAL						\$66,409

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	7210	ELECTRIC COSTS:	\$0.0217 PER KW/H
AREA:		ENERGY CHARGE	\$11.76 PER KW
HOURS/DAY	10		
DAYS/WEEK	5		
BUILDING VOLTAGE	120		

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U @	96 W/FXT =	0 WATTS
4 FOOT	24 1 LAMP @	42 W/FXT =	1008 WATTS
	213 2 LAMP @	24 W/FXT =	5112 WATTS
	3 LAMP @	144 W/FXT =	432 WATTS
	4 LAMP @	192 W/FXT =	576 WATTS
8 FOOT	2 LAMP @	180 W/FXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FXT =	0 WATTS
4 FOOT	24 1 LAMP @	29 W/FXT =	696 WATTS
	213 2 LAMP @	38 W/FXT =	8154 WATTS
	0 3 LAMP @	87 W/FXT =	0 WATTS
	0 4 LAMP @	116 W/FXT =	0 WATTS
8 FOOT	0 2 LAMP @	125 W/FXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	48,148 KWH/YR	ECO ENERGY CONSUMPTION	31,830 KWH/YR
BASELINE DEMAND	174.994 MW/YR	ECO DEMAND	122,948 MW/YR
	18.96 KW		13.85 KW

NET ENERGY SAVINGS	54,753 MW/YR	NET DEMAND SAVINGS	\$827 /YR
NET ENERGY SAVINGS	51.96 MW/YR	NET DOLLAR SAVINGS	\$1,148 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7210

AREA:

LAMP USE:

HOURS/DAY 10

DAYS/WEEK 5

PEAK USE 1 (1-YES, 2-NO)

BUILDING VOLTAGE 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	LAMPS @	WATTS =
1 LAMPS @ 52	52 WATTS	1 LAMPS @ 13	13 WATTS
1 LAMPS @ 60	60 WATTS	0 LAMPS @ 18	0 WATTS
1 LAMPS @ 75	75 WATTS	0 LAMPS @ 26	0 WATTS
1 LAMPS @ 100	100 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
156 KWH		34 KWH	
562 MJ		122 MJ	
0.06 KW		0.01 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS

440 MJ/YR
0.42 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$7 /YR
\$9 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1984

BUILDING #:		INTERIOR LIGHTING: EXIT SIGN REPLACEMENT				ELECTRIC COSTS:	
7210						ENERGY CHARGE	\$0.0211 PER KWH
						DEMAND CHARGE	\$11.78 PER KW
INCANDESCENT EXIT SIGNS		FLUORESCENT EXIT SIGNS		REPLACEMENT FIXTURE			
# EXIT SIGNS		# EXIT SIGNS		# EXIT SIGNS			
WATTAGE	30	WATTAGE	18	WATTAGE	3		
BASELINE ENERGY CONSUMPTION		1,577 KWH/YR		ECO ENERGY CONSUMPTION		263 KWH/YR	
		5,678 MJ/YR				946 MJ/YR	
BASELINE DEMAND		6.18 KW		ECO DEMAND		0.93 KW	
NET ENERGY SAVINGS		4,730 MJ/YR		NET DEMAND SAVINGS		\$21 /YR	
NET ENERGY SAVINGS		4.48 MBTU/YR		NET DOLLAR SAVINGS		\$49 /YR	

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

BUILDING #: 7210
 AREA: HANGAR BAY
 AREA USE: 10
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1
 BUILDING VOLTAGE: 277

ELECTRIC COSTS
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURES		REPLACEMENT FIXTURES	
WATTS	WATTS	WATTS	WATTS
200	0	84	0
456	17706	300	11700
1075	53759	460	23000
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
183,798 KWH		50,220 KWH	
662,828 MJ		326,792 MJ	
71.45 KW		34.70 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	NET DEMAND SAVINGS
344,838 MJ/YR	\$6,196 /YR
326.07 MBTU/YR	\$7,212 /YR

19 AUGUST 1994

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MeansData for Lotus

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Estimate: Bldg. 7210 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City index:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO. 2x4 FLUOR FIXTURES					237.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	114.95	\$0	\$3,164	\$0	\$0		\$3,164
0207082123	DEMO. INCAND FIXTURES / EXIT SIGNS					17.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	4.39	\$0	\$121	\$0	\$0		\$121
0207082540	DEMO. HIGH BAY FIXTURES					89.00	
Unit values	1.00	0.00	27.50	0.00	0.00		27.50
Totals	89.00	\$0	\$2,448	\$0	\$0		\$2,448
002 SITEWORK		239	\$0	\$5,733	\$0	\$0	\$5,733

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUP FLUOR STRIP 4' W 1 32W LAMP R S					24.00 Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	22.58	\$642	\$540	\$0	\$0		\$1,182
1661302300	SUP FLUOR STRIP 4' W 2 32W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		32.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661304289	EXTERIOR 35W HPS WALL PACK					6.00 EA	
Unit values	1.00	75.00	27.50	0.00	0.00		102.50
Totals	6.00	\$450	\$163	\$0	\$0		\$615
1661304291	HIGH BAY, AL REFLECTOR 400W MH					50.00 EA	
Unit values	3.48	295.00	95.50	0.00	0.00		390.50
Totals	172.90	\$14,750	\$4,775	\$0	\$0		\$19,525
1661304292	HIGH BAY, AL REFLECTOR 250W MH					39.00 EA	
Unit values	3.48	243.00	95.50	0.00	0.00		338.50
Totals	135.64	\$9,477	\$3,725	\$0	\$0		\$13,202
1661307777	L.E.D. EXIT SIGN SINGLE FACE					10.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	10.00	\$500	\$275	\$0	\$0		\$775
1661309601	REC FLUOR TROFFER 2X2' W 2 32W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	83.00	38.50	0.00	0.00		124.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.51	84.00	41.50	0.00	0.00		123.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	2.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8					
Unit values	1.14	73.00	31.50	0.00	213.00	EA
Totals	242.82	\$13,549	\$6,710	\$0	0.00	104.50
					\$0	\$22,259
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	96.00	31.50	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	117.50
					\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
Unit values	1.14	97.00	31.50	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	121.50
					\$0	\$0
1661309912	SUR FLUOR 2X4' W 3 32W T8					
Unit values	1.40	115.00	38.50	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	153.50
					\$0	\$0
1661388041	COMP FLUOR LAMP, 10 W TWIN TUBE					
Unit values	0.13	14.50	3.44	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	17.94
					\$0	\$0
1661388042	COMP FLUOR FIX. 2 13 W PL					
Unit values	1.00	25.50	27.50	0.00	1.00	EA
Totals	1.00	\$25	\$28	\$0	0.00	53.00
					\$0	\$54

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	592	\$41,394	\$16,218	\$0	\$0	\$57,612
	ESTIMATE TOTAL	501	\$41,394	\$21,951	\$0	\$0	\$63,345
	SALES TAX	5.00%	\$2,070				
	MATL MARKUP	-40.00%	(\$16,558)				
	LABOR MARKUP	-13.40%		(\$2,941)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$26,906	\$19,010	\$0	\$0	\$45,916
	CONTINGENCY	10.00%					\$4,592
	BOND	2.50%					\$1,148
	PROFIT	10.00%					\$4,592
	JOB TOTAL						\$56,247

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MeansData for Lotus

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 Estimate: Bldg. 7210 Date: 6 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITENCRK	200	\$0	\$5,733	\$0	\$0	\$5,733
016 ELECTRICAL	592	\$41,394	\$16,218	\$0	\$0	\$57,612
TOTAL	801	\$41,394	\$21,951	\$0	\$0	\$63,345
SALES TAX	5.00%	\$2,070				
MATL MARKUP	-40.00%	(\$16,558)				
LABOR MARKUP	-13.40%		(\$2,941)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$26,906	\$19,010	\$0	\$0	\$45,916
CONTINGENCY	10.00%					\$4,592
BOND	2.50%					\$1,148
PROFIT	10.00%					\$4,392
JOB TOTAL						\$56,247

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

12 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7212
 AREA: OFFICES/STAIRWELL/BREAK ROOM
 AREA USE: 24
 HOURS/DAY: 7
 DAYS/WEEK: 7
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.70 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 96 W/FX FT = 0 WATTS
 4 FOOT
 21 1 LAMP @ 42 W/FX FT = 882 WATTS
 8 2 LAMP @ 84 W/FX FT = 672 WATTS
 3 LAMP @ 144 W/FX FT = 0 WATTS
 6 4 LAMP @ 168 W/FX FT = 1008 WATTS
 8 FOOT 2 LAMP @ 180 W/FX FT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 W/FX FT = 0 WATTS
 4 FOOT
 21 1 LAMP @ 29 W/FX FT = 609 WATTS
 8 2 LAMP @ 58 W/FX FT = 464 WATTS
 0 3 LAMP @ 87 W/FX FT = 0 WATTS
 6 4 LAMP @ 118 W/FX FT = 708 WATTS
 8 FOOT 0 2 LAMP @ 125 W/FX FT = 0 WATTS

BASELINE ENERGY CONSUMPTION 22,382 KWH/YR ECO ENERGY CONSUMPTION 74,339 KWH/YR
 BASELINE DEMAND 80,374 MJ/YR ECO DEMAND 58,012 MJ/YR
 2.56 KW 1.78 KW

NET ENERGY SAVINGS 24,362 MJ/YR NET DEMAND SAVINGS \$118 /YR
 NET ENERGY SAVINGS 23.28 MBTU/YR NET DOLLAR SAVINGS \$254 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7212
 AREA: RESTROOM/OFFICE
 LAMP USE: 10
 HOURS/DAY: 7
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

BUILDING VOLTAGE:

EXISTING INCANDESCENTS			
6 LAMPS @	52 WATTS =	312 WATTS	
6 LAMPS @	60 WATTS =	360 WATTS	
6 LAMPS @	75 WATTS =	450 WATTS	
6 LAMPS @	90 WATTS =	540 WATTS	
1 LAMPS @	100 WATTS =	100 WATTS	
BASELINE ENERGY CONSUMPTION		1,500 KWH	378 KWH
		5,398 MJ	1,363 MJ
BASELINE DEMAND		0.01 KW	0.10 KW
ECO ENERGY CONSUMPTION			
		13 WATTS =	78 WATTS
		18 WATTS =	0 WATTS
		26 WATTS =	26 WATTS
ECO DEMAND			

NET ENERGY SAVINGS	4,036 MJ/YR	NET DEMAND SAVINGS	\$44 /YR
NET ENERGY SAVINGS	3.83 MESTU/YR	NET DOLLAR SAVINGS	\$67 /YR

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MeansData for Lotus

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Estimate: Bldg. 7212 Date: 8 July 1994
 Description: Control Tower
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					35.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.2	
Totals	16.98	\$0	\$467	\$0	\$0	\$46	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					7.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.1	
Totals	1.81	\$0	\$50	\$0	\$0	\$5	
U02 SITEWORK	19	\$0	\$517	\$0	\$0	\$51	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 32W LAMP R S					21.00 Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	19.76	\$562	\$473	\$0	\$0		\$1,033
1661302300	SUR FLUOR STRIP 4' W 2 32W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		53.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661307777	E.E.D. EXIT SIGN SINGLE FACE					(qty) EA	
Unit values	1.00	185.00	27.50	0.00	0.00		212.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-C ACRYLIC LENS					(qty) EA	
Unit values	1.40	89.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					6.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	10.20	\$564	\$282	\$0	\$0		\$846
1661309807	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					8.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	9.12	\$584	\$252	\$0	\$0		\$836
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					(qty) EA	
Unit values	1.14	90.00	31.50	0.00	0.00		121.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	7.00 EA	53.00
Totals	7.00	\$179	\$193	\$	\$0	\$372

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		47	\$1,889	\$1,230	\$0	\$0	\$3,089
ESTIMATE TOTAL		66	\$1,889	\$1,717	\$0	\$0	\$3,606
SALES TAX	5.00%		\$94				
MATL MARKUP	-40.00%		(\$756)				
LABOR MARKUP	-13.40%			(\$230)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$1,228	\$1,487	\$0	\$0	\$2,715
CONTINGENCY	10.00%						\$271
BOND	2.50%						\$68
PROFIT	10.00%						\$271
JOB TOTAL							\$3,326

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MeansData for Lotus

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Estimate: Bldg. 7212 Date: 8 July 1994
 Description: Control Tower
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	19	\$0	\$517	\$0	\$0	\$517
U16 ELECTRICAL	47	\$1,859	\$1,200	\$0	\$0	\$3,059
TOTAL	66	\$1,859	\$1,717	\$0	\$0	\$3,576
SALES TAX	5.00%	\$94				
MATL MARKUP	-40.00%	(\$756)				
LABOR MARKUP	-13.40%		(\$230)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$1,228	\$1,487	\$0	\$0	\$2,715
CONTINGENCY	10.00%					\$271
BOND	2.50%					\$68
PROFIT	10.00%					\$271
JOB TOTAL						\$3,326

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7214
 AREA: ENTIRE BLDG
 AREA USE: 14
 HOURS/DAY: 5
 DAYS/WEEK: 5

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.76 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	68 W/FIXT =	0 WATTS
4 FOOT	1 LAMP @	48 W/FIXT =	0 WATTS
	180 2 LAMP @	84 W/FIXT =	13440 WATTS
	5 3 LAMP @	126 W/FIXT =	630 WATTS
	4 LAMP @	132 W/FIXT =	0 WATTS
8 FOOT	2 LAMP @	180 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	50 W/FIXT =	0 WATTS
4 FOOT	0 1 LAMP @	29 W/FIXT =	0 WATTS
	180 2 LAMP @	50 W/FIXT =	9180 WATTS
	5 3 LAMP @	87 W/FIXT =	435 WATTS
	0 4 LAMP @	116 W/FIXT =	0 WATTS
8 FOOT	0 2 LAMP @	125 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	51,215 KWH/YR	ECO ENERGY CONSUMPTION	35,343 KWH/YR
BASELINE DEMAND	184,373 MJ/YR	ECO DEMAND	127,305 MJ/YR
	14.87 KW		9.72 KW

NET ENERGY SAVINGS: 57,868 MJ/YR
 NET ENERGY SAVINGS: \$4.86 MJ/\$YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS

\$616 /YR
 \$950 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7214
AREA: RESTROOM
LAMP USE: 3
HOURS/DAY: 5
DAYS/WEEK: 2 (1-YES, 2-NO)
PEAK USE: 2
BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$9.02/11 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @	WATTS =	LAMPS @	WATTS =
1 LAMPS @ 52	52 WATTS	0 LAMPS @ 13	0 WATTS
1 LAMPS @ 60	60 WATTS	0 LAMPS @ 10	0 WATTS
1 LAMPS @ 75	75 WATTS	0 LAMPS @ 26	0 WATTS
1 LAMPS @ 90	90 WATTS		
1 LAMPS @ 100	100 WATTS		
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
148 MJ		37 MJ	
BASELINE DEMAND		ECO DEMAND	
0.65 KW		0.61 KW	
NET ENERGY SAVINGS		NET DEMAND SAVINGS	
132 MJ/YR		\$0 /YR	
NET ENERGY SAVINGS		NET DOLLAR SAVINGS	
0.13 MBTU/YR		\$1 /YR	

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING INCANDESCENT LAMP REPLACEMENT

BUILDING 8: 7214
 AREA: OFFICE
 LAMP USE: 8
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 1
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE \$0.0211 PER KWH
 DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS 405 WATTS = 810 WATTS
 2 LAMPS @ 12 LAMP @ 58 WATTS = 58 WATTS
 BASELINE ENERGY CONSUMPTION 1,695 KWH 127 KWH
 8,045 MJ 434 MJ
 BASELINE DEMAND 2.81 KW 2.06 KW

NET ENERGY SAVINGS 5,631 MJ/YR
 NET ENERGY SAVINGS 5.34 MBTU/YR
 NET DEMAND SAVINGS \$106 /YR
 NET DOLLAR SAVINGS \$139 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS: \$0.0211 PER KWH
ENERGY CHARGE \$11.76 PER KW
DEMAND CHARGE

7214

INCANDESCENT EXIT SIGNS
EXIT SIGNS
WATTAGE

FLUORESCENT EXIT SIGNS
EXIT SIGNS
WATTAGE

REPLACEMENT FIXTURE
EXIT SIGNS
WATTAGE

28 KWH/YR
95 MJ/YR
0.003 KW

ECO ENERGY CONSUMPTION
ECO DEMAND

138 KWH/YR
548 MJ/YR
0.03 KW

BASELINE ENERGY CONSUMPTION
BASELINE DEMAND

32 /YR
95 /YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

473 MJ/YR
0.45 MDT/YR

NET ENERGY SAVINGS
NET ENERGY SAVINGS

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

BUILDING #: 7214
 AREA: HANGAR/SHOP BAYS
 AREA USE: 14
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1: YES, 2: NO)
 PEAK USE: 1

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURES		REPLACEMENT FIXTURES	
WATTS	WATTS	WATTS	WATTS
200	0	64	0
454	10442	300	6900
1075	153200	400	44160
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
412,637 KWH		163,758 KWH	
1,489,185 MJ		609,090 MJ	
BASELINE DEMAND		ECO DEMAND	
113.64 KW		51.96 KW	

NET ENERGY SAVINGS	820,875 MJ/YR	NET DEMAND SAVINGS	\$8,847 /YR
NET ENERGY SAVINGS	777.25 MDTU/YR	NET DOLLAR SAVINGS	\$13,653 /YR

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MeansData for Lotus

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Estimate: Bldg. 7214 Date: 8 July 1994
 Description: Hanger
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO, 2x2, 1x4 FLUOR FIXTURES					160.00	
Unit values	3.36	0.00	10.00	0.00	0.00	10.00	
Totals	58.24	\$0	\$2,600	\$0	\$0	\$1,600	
0207082121	DEMO, 2x4 FLUOR FIXTURES					5.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	2.43	\$0	\$67	\$0	\$0	\$67	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					4.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	1.03	\$0	\$28	\$0	\$0	\$28	
0207082540	DEMO, HIGH BAY FIXTURES					119.00	
Unit values	2.00	0.00	27.50	0.00	0.00	27.50	
Totals	119.00	\$0	\$3,273	\$0	\$0	\$3,273	
U02 SITEWORK	181	\$0	\$4,968	\$0	\$0	\$4,968	

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661304291	HIGH BAY, AL REFLECTOR 400W MH					96.00 EA	
Unit values	3.49	295.00	95.50	0.00	0.00		390.50
Totals	333.89	\$28,320	\$9,168	\$0	\$0		\$37,488
1661304292	HIGH BAY, AL REFLECTOR 250W MH					23.00 EA	
Unit values	3.49	243.00	95.50	0.00	0.00		338.50
Totals	75.99	\$5,889	\$2,197	\$0	\$0		\$7,726
1661307777	L.E.D. EXIT SIGN SINGLE FACE					1.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	1.00	\$50	\$28	\$0	\$0		\$78
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	2.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$
1661309909	SUR FLOOR 1X4' W 2 32W T8					
Unit values	1.14	66.00	31.50	0.00	106.00 EA	117.5
Totals	120.84	\$9,116	\$3,339	\$0	\$0	\$12,45
1661309910	INDUSTRIAL FLOOR 1X4' W 2 32W T8					
Unit values	1.14	60.00	31.50	0.00	55.00 EA	91.5
Totals	62.70	\$3,300	\$1,733	\$0	\$0	\$5,03
1661309912	SUR FLOOR 2X4' W 3 32W T8					
Unit values	1.40	115.00	38.50	0.00	5.00 EA	153.5
Totals	7.00	\$575	\$193	\$0	\$0	\$76
1661329041	COMP FLOOR LAMP, 15 W TWIN TUBE					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.5
Totals	0.00	\$0	\$0	\$0	\$0	\$
1661369042	COMP FLOOR FIX, 2 13 W PL					
Unit values	1.00	25.50	27.50	0.00	1.00 EA	53.0
Totals	1.00	\$26	\$29	\$0	\$0	\$5

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*****
Line #      Description
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              Manhours   Matl     Labor   Equipment   Sub     Total
*****
U16 ELECTRICAL      607    $46,976    $18,686         $0         $0    $63,6

ESTIMATE TOTAL      739    $46,976    $21,654         $0         $0    $68,6

SALES TAX           5.00%      $2,349
MATL MARKUP        -40.00%    ($18,790)
LABOR MARKUP       -13.40%      ($2,902)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC $30,534    $18,752         $0         $0    $49,2
CONTINGENCY          10.00%           $4,9
BOND                  2.50%           $1,2
PROFIT               10.00%           $4,9

JOB TOTAL                                     $60,3

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MeansData for Lotus

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Estimate: Bldg. 7214 Date: 8 July 1994
 Description: Hanger
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	181	\$0	\$4,965	\$0	\$0	\$4,965
016 ELECTRICAL	607	\$46,976	\$16,686	\$0	\$0	\$63,662
TOTAL	788	\$46,976	\$21,651	\$0	\$0	\$68,627
SALES TAX	5.00%	\$2,349				
MATL MARKUP	-40.00%	(\$18,790)				
LABOR MARKUP	-13.40%		(\$2,902)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$30,534	\$18,752	\$0	\$0	\$49,286
CONTINGENCY	10.00%					\$4,929
BOND	2.50%					\$1,232
PROFIT	10.00%					\$4,929
JOB TOTAL						\$60,376

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7218
 AREA: ENTIRE BLDG
 AREA USE: 14
 HOURS/DAY: 5
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.74 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 36 W/FXT = 0 WATTS
 4 FOOT 1 LAMP 0 48 W/FXT = 0 WATTS
 201 2 LAMP 0 84 W/FXT = 1684 WATTS
 16 3 LAMP 0 126 W/FXT = 2016 WATTS
 4 LAMP 0 192 W/FXT = 0 WATTS
 8 FOOT 2 LAMP 0 180 W/FXT = 9 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U 58 W/FXT = 0 WATTS
 4 FOOT 0 1 LAMP 0 29 W/FXT = 0 WATTS
 201 2 LAMP 0 58 W/FXT = 11658 WATTS
 16 3 LAMP 0 87 W/FXT = 1392 WATTS
 0 4 LAMP 0 116 W/FXT = 0 WATTS
 8 FOOT 0 2 LAMP 0 125 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 68,758 KWH/YR
 207,444 MJ/YR
 BASELINE DEMAND 18.96 KW
 ECO ENERGY CONSUMPTION 47,502 KWH/YR
 171,007 MJ/YR
 ECO DEMAND 13.05 KW

NET ENERGY SAVINGS 76,458 MJ/YR
 NET ENERGY SAVINGS 72.66 MBTU/YR
 NET DEMAND SAVINGS 5.927 YR
 NET DOLLAR SAVINGS \$1,276 YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7218
AREA: RESTROOM

LAMP USE:
HOURS/DAY: 3
DAYS/WEEK: 5
PEAK USE: 2 (1-YES, 2-NO)

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING INCANDESCENTS		WATTS =		COMPACT FLUORESCENT REPLACEMENT	
LAMPS @		52	0 WATTS	1 LAMPS @	13 WATTS =
1 LAMPS @	60	60	0 WATTS	0 LAMPS @	18 WATTS =
1 LAMPS @	75	75	0 WATTS	0 LAMPS @	28 WATTS =
1 LAMPS @	90	90	0 WATTS		
1 LAMPS @	100	100	0 WATTS		

BASELINE ENERGY CONSUMPTION 47 KWH 188 MJ 8.8% KW
ECO ENERGY CONSUMPTION 10 KWH 37 MJ 0.81 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS	132 MJ/YR	NET DEMAND SAVINGS	\$0 /YR
NET ENERGY SAVINGS	0.13 MBTU/YR	NET DOLLAR SAVINGS	\$1 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7218
 AREA: OFFICE
 LAMP USE: 0
 HOURS/DAY: 5
 DAYS/WEEK: 1 (1-YES, 2-NO)
 PEAK USE: 120
 BUILDING VOLTAGE: 120

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.76 PER KW

EXISTING INCANDESCENTS	405 WATTS =	810 WATTS	FLUORESCENT FIXTURE REPLACEMENT	58 WATTS
2 LAMPS @			1 1/2 LAMP @	
BASELINE ENERGY CONSUMPTION	7,405 KWH/YR		ECO ENERGY CONSUMPTION	131 KWH
	9,945 MJ			434 MJ
BASELINE DEMAND	0.81 KW		ECO DEMAND	0.06 KW

NET ENERGY SAVINGS	5,631 MJ/YR	NET DEMAND SAVINGS	\$106 /YR
NET ENERGY SAVINGS	5.34 MBTU/YR	NET DOLLAR SAVINGS	\$139 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT			
BUILDING #:	7218	ELECTRIC COSTS:	\$0.0211 PER KWH
		ENERGY CHARGE	\$11.76 PER KW
		DEMAND CHARGE	
INCANDESCENT EXIT SIGNS		FLUORESCENT EXIT SIGNS	
# EXIT SIGNS		# EXIT SIGNS	
WATTAGE	30	WATTAGE	16
		REPLACEMENT FIXTURE	
		# EXIT SIGNS	3
		WATTAGE	3
BASELINE ENERGY CONSUMPTION			
	473 KWH/YR	ECO ENERGY CONSUMPTION	79 KWH/YR
	1,763 BLU/YR		234 BLU/YR
	8.05 KW	ECO DEMAND	8.000 KW
BASELINE DEMAND			
NET ENERGY SAVINGS	1,419 BLU/YR	NET DEMAND SAVINGS	\$6 /YR
NET ENERGY SAVINGS	1.35 \$/KWH/YR	NET DOLLAR SAVINGS	\$15 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

12 AUGUST 1994

BUILDING #:	7218		
AREA:	HANGAR/SHOP BAYS		
AREA USE:			
HOURS/DAY:	14	ELECTRIC COST:	\$0.0211 PER KWH
DAYS/WEEK:	5	ENERGY CHARGE:	\$11.78 PER KW
PEAK USE:	1 (1-YES, 2-NO)	DEMAND CHARGE:	

BUILDING VOLTAGE: 277

EXISTING FIXTURES		REPLACEMENT FIXTURES	
INCAND @	200 WATTS = 0 WATTS	HPS @	64 WATTS = 0 WATTS
28 MV @	454 WATTS = 12712 WATTS	30 MV @	300 WATTS = 8400 WATTS
55 MV @	1075 WATTS = 103205 WATTS	50 MV @	460 WATTS = 4160 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
431,828 KWH		197,318 KWH	
1,518,916 MJ		698,746 MJ	
115.91 KW		52.56 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	838,165 MJ/YR	NET DEMAND SAVINGS	\$8,955 /YR
NET ENERGY SAVINGS	786.81 MBTU/YR	NET DOLLAR SAVINGS	\$13,821 /YR

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MeansData for Lotus

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Estimate: Bldg. 7218 Date: 8 July 1994
 Description: Hanger
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO, 2x2, 1x4 FLUOR FIXTURES					201.00	
Unit values	0.36	0.00	10.00	0.00	0.00	10.00	
Totals	73.16	\$0	\$2,010	\$0	\$0	\$2,010	
0207082121	DEMO, 2x4 FLUOR FIXTURES					16.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.35	
Totals	7.76	\$0	\$214	\$0	\$0	\$214	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					6.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.10	
Totals	1.55	\$0	\$43	\$0	\$0	\$43	
0207082540	DEMO, HIGH BAY FIXTURES					124.00	
Unit values	1.00	0.00	27.50	0.00	0.00	27.50	
Totals	124.00	\$0	\$3,410	\$0	\$0	\$3,410	
U02 SITEWORK	207	\$0	\$5,677	\$0	\$0	\$5,677	

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1561302200	SUR FLUOR STRIP 4' W 1 40W LAMP R.S					(qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561302300	SUR FLUOR STRIP 4' W 2 40W LAMP R.S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561304291	HIGH BAY, AL REFLECTOR 400W MH					96.00 EA	
Unit values	3.48	295.00	95.50	0.00	0.00		390.50
Totals	333.89	\$28,320	\$9,168	\$0	\$0		\$37,488
1561304292	HIGH BAY, AL REFLECTOR 250W MH					28.00 EA	
Unit values	3.48	243.00	95.50	0.00	0.00		338.50
Totals	97.38	\$6,804	\$2,674	\$0	\$0		\$9,478
1561307777	L.E.D. EXIT SIGN SINGLE FACE					3.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	3.00	\$150	\$83	\$0	\$0		\$233
1561309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1561309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50

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MeansData for Lotus

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Totals	0.00	\$0	SC	SC	\$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	114.00 EA	117.50
Totals	129.96	\$9,804	\$3,591	\$0	\$0	\$13,395
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	80.00	31.50	0.00	88.00 EA	91.50
Totals	100.32	\$5,280	\$2,772	\$0	\$0	\$6,052
1661309912	SUR FLUOR 2X4' W 3 32W T8					
Unit values	1.40	115.00	38.50	0.00	16.00 EA	153.50
Totals	22.40	\$1,840	\$616	\$0	\$0	\$2,456
1661388041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W PL					
	WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	1.00 EA	53.00
Totals	1.00	\$26	\$28	\$0	\$0	\$54

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
016	ELECTRICAL	669	\$52,224	\$18,932	SC	SC	\$71,156
	ESTIMATE TOTAL	669	\$52,224	\$24,609	SC	SC	\$76,833
	SALES TAX	5.00%	\$2,612				
	MATL MARKUP	-40.00%	(\$20,893)				
	LABOR MARKUP	-13.40%		(\$3,298)			
	EQUIPT MARKUP	0.00%			SC		
	SUB MARKUP	0.00%				SC	
	TOTAL BEFORE CONTINGENC		\$33,946	\$21,311	SC	SC	\$55,257
	CONTINGENCY	10.00%					\$5,526
	BOND	2.50%					\$1,381
	PROFIT	10.00%					\$5,526
	JOB TOTAL						\$67,690

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MeansData for Lotus

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Estimate: Bldg. 7218 Date: 6 July 1994
 Description: Hanger
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	207	\$0	\$5,677	\$0	\$0	\$5,677
U16 ELECTRICAL	588	\$52,224	\$18,932	\$0	\$0	\$71,156
TOTAL	895	\$52,224	\$24,609	\$0	\$0	\$76,833
SALES TAX	5.00%	\$2,611				
MATL MARKUP	-40.00%	(\$20,890)				
LABOR MARKUP	-13.40%		(\$3,298)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$33,946	\$21,311	\$0	\$0	\$55,257
CONTINGENCY	10.00%					\$5,526
BOND	2.50%					\$1,381
PROFIT	10.00%					\$5,526
JCB TOTAL						\$67,690

FORT CAMPBELL LIGHTING SURVEY

EGD 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7261
 AREA: EMPL ARE BLDG
 HOURS/DAY: 14
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.76 PER KW

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 60 WFFXT = 0 WATTS
 4 FOOT 1 LAMP @ 48 WFFXT = 0 WATTS
 55 2 LAMP @ 84 WFFXT = 7380 WATTS
 3 LAMP @ 144 WFFXT = 0 WATTS
 4 LAMP @ 182 WFFXT = 0 WATTS
 8 FOOT 2 LAMP @ 180 WFFXT = 0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT 0 2 LAMP U @ 58 WFFXT = 0 WATTS
 4 FOOT 0 1 LAMP @ 38 WFFXT = 0 WATTS
 55 2 LAMP @ 54 WFFXT = 5510 WATTS
 0 3 LAMP @ 87 WFFXT = 0 WATTS
 0 4 LAMP @ 118 WFFXT = 0 WATTS
 8 FOOT 0 2 LAMP @ 125 WFFXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 25,507 KWH/YR
 EGD ENERGY CONSUMPTION 20,856 KWH/YR
 BASELINE DEMAND 104,578 BL/YR
 EGD DEMAND 72,203 BL/YR
 7.96 KW 5.51 KW

NET ENERGY SAVINGS 32,267 KWH/YR
 NET ENERGY SAVINGS 30.58 MESTU/YR

NET DEMAND SAVINGS
 NET DOLLAR SAVINGS \$349 /YR
 \$538 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

19 AUGUST 1984

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

ELECTRIC COSTS:
ENERGY CHARGE 30.0211 PER KWH
DEMAND CHARGE 311.78 PER KW

BUILDING #: 7243

INCANDESCENT EXIT SIGNS	PLUMBED, INT EXIT SIGNS	REPLACEMENT FEATURE
# EXIT SIGNS	# EXIT SIGNS	# EXIT SIGNS
WATTAGE	WATTAGE	WATTAGE
30	18	3

BAS. LINE ENERGY CONSUMPTION	313 KWH/YR	ECO ENERGY CONSUMPTION	83 KWH/YR
	1,136 MWH/YR		189 MWH/YR
BAS. LINE DEMAND	0.84 KW	ECO DEMAND	0.01 KW

NET ENERGY SAVINGS	946 MWH/YR	NET DEMAND SAVINGS	\$4 /YR
NET ENERGY SAVINGS	0.90 MWH/YR	NET DOLLAR SAVINGS	\$10 /YR

13 AUGUST 1993

**STAY'S AGENT
NET ENERGY SAVINGS**

277

ELECTRIC COSTS:	\$0.0211	PER KW-H
ENERGY CHARGE:	\$11.78	PER KW
DEMAND CHARGE:		

REPLACEMENT FIXTURES	
0 HPS @	54 WATTS
0 MH @	300 WATTS
120 MH @	460 WATTS
120 MH @	55300 WATTS
	0 WATTS
	0 WATTS

ECO ENERGY CONSUMPTION	209,928 KWH
	723,341 DJ
ECO DEMAND	55.20 KW

NET DEMAND SAVINGS **\$10,832 /YR**

411 00.621

967.875 MJYR
916.57 MBTU/YR

\$10,432 NR
\$16,101 NR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

EXTERIOR LIGHTING REPLACEMENT

BUILDING #: 7243

AREA USE: 4400
HOURS/YR

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURES	100 WATTS =	900 WATTS	46 WATTS =	414 WATTS
9 INCANDESCENT	200 WATTS =	0 WATTS	46 WATTS =	0 WATTS
QUARTZ HALOGEN	454 WATTS =	0 WATTS	188 WATTS =	0 WATTS
MP				

BASELINE ENERGY CONSUMPTION	3,960 KWH	ECO ENERGY CONSUMPTION	1,823 KWH
	14,298 MJ		6,558 MJ
BASELINE DEMAND	6.56 KW	ECO DEMAND	8.41 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

7,836 MJ/YR
7.38 MBTU/YR

NET DOLLAR SAVINGS

\$46 /YR

27-Jul-94

MeansData for Lotus

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*****
Estimate:      Bldg. 7243      Date:      8 July 1994
Description:    Hanger
Project:       Lighting Study   Bid Date:
Location:      Ft. Campbell     Job #:
Sq. footage:   City Indx:
*****

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082119	DEMO, 2x2, 1x4 FLUOR FIXTURES					10.00	
Unit values		0.36	0.00	10.00	0.00	0.00	10.00
Totals		3.64	\$0	\$100	\$0	\$0	\$100
0207082121	DEMO, 2x4 FLUOR FIXTURES					85.00	
Unit values		0.49	0.00	13.35	0.00	0.00	13.35
Totals		41.23	\$0	\$1,135	\$0	\$0	\$1,135
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					11.00	
Unit values		0.26	0.00	7.10	0.00	0.00	7.10
Totals		2.84	\$0	\$78	\$0	\$0	\$78
0207082540	DEMO, HIGH BAY FIXTURES					120.00	
Unit values		1.00	0.00	27.50	0.00	0.00	27.50
Totals		120.00	\$0	\$3,300	\$0	\$0	\$3,300
U02 SITENCRK		168	\$0	\$4,613	\$0	\$0	\$4,613

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S						
Unit values	0.94	26.74	22.52	0.00			
Totals	0.00	\$0	\$0	\$0			
1661302300	SUR FLUOR STRIP 4' W 2 40W LAMP R S						
Unit values	1.00	28.65	23.82	0.00			
Totals	0.00	\$0	\$0	\$0			
1661304289	EXTERIOR 35W HPS WALL PACK						
Unit values	1.00	75.00	27.50	0.00			
Totals	9.00	\$675	\$248	\$0			
1661304291	HIGH BAY, AL REFLECTOR 400W MH						
Unit values	3.48	235.00	95.50	0.00			
Totals	417.36	\$35,400	\$11,460	\$0			
1661307777	L.E.D. EXIT SIGN SINGLE FACE						
Unit values	1.00	50.00	27.50	0.00			
Totals	2.00	\$200	\$55	\$0			
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS						
Unit values	1.40	88.00	38.50	0.00			
Totals	0.00	\$0	\$0	\$0			
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.51	84.00	41.50	0.00			
Totals	119.29	\$6,636	\$3,379	\$0			
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS						
Unit values	1.60	90.00	44.00	0.00			
Totals	0.00	\$0	\$0	\$0			
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS						
Unit values	1.70	94.00	47.00	0.00			
Totals	0.00	\$0	\$0	\$0			
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS						
Unit values	1.14	73.00	31.50	0.00			

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MeansData for Lotus

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Totals	0.00	\$0	SC	SC	\$0	\$0
1661309909	SUR FLUOR 1X4' W 2 32W T8					
Unit values	1.14	86.00	31.50	0.00	0.00 EA	117.50
Totals	0.00	\$0	SC	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8 TWO-PIECE REFLECTOR					
Unit values	1.14	80.00	31.50	0.00	10.00 EA	91.50
Totals	11.40	\$600	\$315	\$0	\$0	\$915
1661309911	SUR FLUOR 2X4' W 2 32W T8					
Unit values	1.29	95.00	35.50	0.00	6.00 EA	130.50
Totals	7.74	\$570	\$213	\$0	\$0	\$783
1661358041	COMP FLUOR LAMP, 18 W TWIN TUBE GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	SC	\$0	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		567	\$43,981	\$15,570	\$0	\$0	\$59,551
ESTIMATE TOTAL		735	\$43,981	\$20,153	\$0	\$0	\$64,134
SALES TAX	5.00%		\$2,199				
MATL MARKUP	-45.00%		(\$17,592)				
LABOR MARKUP	-13.40%			(\$2,705)			
EQUIPT MARKUP	0.00%				\$0		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$28,588	\$17,478	\$0	\$0	\$46,066
CONTINGENCY	10.00%						\$4,607
BOND	2.50%						\$1,152
PROFIT	10.00%						\$4,637
JOB TOTAL							\$56,431

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MeansData for Lotus

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Estimate: Bldg. 7243 Date: 8 July 1994
 Description: Hanger
 Project: Lightning Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	168	\$0	\$4,613	\$0	\$0	\$4,613
U16 ELECTRICAL	567	\$43,981	\$15,570	\$0	\$0	\$59,551
TOTAL	735	\$43,981	\$20,183	\$0	\$0	\$64,164
SALES TAX	5.00%	\$2,199				
MATL MARKUP	-40.00%	(\$17,592)				
LABOR MARKUP	-13.40%		(\$2,705)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$28,588	\$17,478	\$0	\$0	\$46,066
CONTINGENCY	10.00%					\$4,607
BOND	2.50%					\$1,152
PROFIT	10.00%					\$4,607
JOB TOTAL						\$56,431

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1992

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7245
 AREA: ENTIRE BLDG
 AREA USE: 14
 DAYS/WEEK: 5
 BUILDING VOLTAGE: 277

ELECTRIC COSTS:
 \$0.0211 PER KWH
 DEMAND CHARGE: \$11.70 PER KW

REPLACEMENT FIXTURE DATA

2 FOOT 2 LAMP U 95 W/FXT = 0 W TS 58 W/FXT = 0 WATTS

4 FOOT 32 1 LAMP 2 285 2 LAMP 3 19 3 LAMP 3 0 4 LAMP 3 29 W/FXT = 2808 WATTS
 58 W/FXT = 15588 WATTS
 87 W/FXT = 1653 WATTS
 118 W/FXT = 0 WATTS

8 FOOT 0 2 LAMP 3 125 W/FXT = 0 WATTS

EXISTING FIXTURE DATA

2 FOOT 2 LAMP U 95 W/FXT = 0 W TS 0 WATTS

4 FOOT 42 W/FXT = 3804 WATTS
 84 W/FXT = 24024 WATTS
 125 W/FXT = 2394 WATTS
 152 W/FXT = 0 WATTS

8 FOOT 180 W/FXT = 0 WATTS

BASELINE ENERGY CONSUMPTION 110.234 KWH/YR 78.109 KWH/YR
 394.915 BLU/YR 273.932 BLU/YR
 30.26 KW 20.91 KW

NET ENERGY SAVINGS 122,824 BLU/YR NET DEMAND SAVINGS \$1,305 /YR
 NET ENERGY SAVINGS 198.41 KWH/YR NET DOLLAR SAVINGS \$2,845 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

18 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7245

AREA: OFFICE

LAMP USE: 8

HOURS/DAY: 5

DAYS/WEEK: 1 (1-YES, 2-NO)

PEAK USE: 1

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.76 PER KW

EXISTING INCANDESCENTS
2 LAMPS @ 750 WATTS = 1500 WATTS

FLUORESCENT FIXTURE REPLACEMENT
1 2 LAMP @ 58 W/FIXT = 58 WATTS

BASELINE ENERGY CONSUMPTION/

3,120 KWH
91,232 MJ
1.50 KW

ECO ENERGY CONSUMPTION/

121 KWH
434 MJ
0.06 KW

BASELINE DEMAND

ECO DEMAND

NET ENERGY SAVINGS

19,706 MJ/YR
18.73 MBTU/YR

NET DEMAND SAVINGS

\$204 /YR
\$267 /YR

NET ENERGY SAVINGS

\$204 /YR
\$267 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING

13 AUGUST 1984

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 7245

ELECTRIC COSTS: 30.0211 PER KWH
ENERGY CHARGE
DEMAND CHARGE: \$11.75 PER KW

INCANDESCENT EXIT SIGNS
EXIT SIGNS
WATTAGE

FLUORESCENT EXIT SIGNS
EXIT SIGNS
WATTAGE

REPLACEMENT FUTURE
EXIT SIGNS
WATTAGE

200 KWH/YR
1,941 MJ/YR
8.83 KW

ECO ENERGY CONSUMPTION
ECO DEMAND

\$23 /YR
\$54 /YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

8,283 MJ/YR
4.93 MBTU/YR

NET ENERGY SAVINGS
NET ENERGY SAVINGS

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

BUILDING #:
7243
AREA:
HANGAR 5A

HAYCAR BAY

AREA USE

14
TUESDAY

DAY\$WEEK

[illegible]

BUILDING VOLTAGE: 277

ELECTRIC COSTS.		
ENERGY CHARGE	\$0.0219	PER KW-HR
DEMAND CHARGE	\$11.78	PER KW

EXISTING FIXTURES			REPLACEMENT FIXTURES			ECO ENERGY CONSUMPTION		
200 WATTS	0 WATTS	272,919 KWH	64 WATTS	0 WATTS	117,208 KWH			
454 WATTS	0 WATTS	596,078 MJ	300 WATTS	0 WATTS	421,948 MJ			
1075 WATTS	75260 WATTS	75.75 KW	460 WATTS	32200 WATTS	32.20 KW			
TO MV @			TO MV @					
BASELINE ENERGY CONSUMPTION			ECO DEMAND					
664,127 MJ/YR			NET DEMAND SAVINGS					
534.67 MBTJ/YR			NET DOLLAR SAVINGS					
NET ENERGY SAVINGS								
NET ENERGY SAVINGS								

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MeansData for Lotus

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Estimate: Bldg. 7245 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Job Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLOOR FIXTURES					397.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	192.55	\$0	\$5,300	\$0	\$0		\$5,300
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					13.00	
Unit values	3.26	0.00	7.10	0.00	0.00		7.10
Totals	3.35	\$0	\$92	\$0	\$0		\$92
0207082540	DEMO, HIGH BAY FIXTURES					70.00	
Unit values	1.00	0.00	27.50	0.00	0.00		27.50
Totals	70.00	\$0	\$1,925	\$0	\$0		\$1,925
002 SITEWORK		266	\$0	\$7,317	\$0	\$0	\$7,317

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 32W LAMP R S					92.00 Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.26
Totals	66.57	\$2,460	\$2,171	\$0	\$0		\$4,631
1661302300	SUR FLUOR STRIP 4' W 2 32W LAMP R S					(qty) Ea.	
Unit values	1.00	22.65	23.82	0.00	0.00		52.47
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661304291	HIGH BAY, AL REFLECTOR 400W MH					70.00 EA	
Unit values	3.48	295.00	55.50	0.00	0.00		390.50
Totals	243.46	\$20,650	\$6,695	\$0	\$0		\$27,355
1661307777	L.E.D. EXIT SIGN SINGLE FACE					11.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.50
Totals	11.00	\$550	\$303	\$0	\$0		\$853
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-U ACRYLIC LENS					(qty) EA	
Unit values	1.40	88.00	38.50	0.00	0.00		126.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309832	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.50
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309833	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309834	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) EA	
Unit values	1.70	94.00	47.00	0.00	0.00		141.00
Totals	0.00	\$0	\$0	\$0	\$0		\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					165.00 EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.50
Totals	166.10	\$12,045	\$5,198	\$0	\$0		\$17,243
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) EA	
Unit values	1.14	96.00	31.50	0.00	0.00		117.50

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MeansData for Lotus

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Totals	0.00	SC	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	31.50	0.00	122.00	EA
Totals	139.08	\$7,320	\$3,943	\$0	0.00	91.
					SC	\$11,1
1661309912	SUR FLUOR 2X4' W 3 32W T8					
Unit values	1.40	115.00	38.50	0.00	19.00	EA
Totals	26.60	\$2,185	\$732	\$0	0.00	153.
					SC	\$2,9
1661368041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty)	EA
Totals	0.00	\$0	\$0	\$0	0.00	17.
					SC	\$0

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MeansData for Lotus

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=====
Line #      Description
-----
              Manhours   Matl      Labor   Equipment   Sub      Total
=====
U16 ELECTRICAL      695      $45,210   $18,832           $0          $0      $64,0

ESTIMATE TOTAL      661      $45,210   $26,149           $0          $0      $71,3

SALES TAX              5.00%      $2,261
MATL MARKUP          -40.00%   ($18,064)
LABOR MARKUP         -13.40%           ($3,504)
EQUIPT MARKUP         0.00%           $0
SUB MARKUP           0.00%           $0

TOTAL BEFORE CONTINGENC $29,387   $22,645           $0          $0      $52,0
CONTINGENCY          10.00%           $5,2
SCND                 2.50%           $1,3
PROFIT              10.00%           $5,2

JOB TOTAL                                     $63,7

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MeansData for Lotus

Pa

Estimate: Bldg. 7245 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
002 SITEWORK	266	\$0	\$7,317	\$0	\$0	\$7,317
016 ELECTRICAL	695	\$45,210	\$18,832	\$0	\$0	\$64,042
TOTAL	961	\$45,210	\$26,149	\$0	\$0	\$71,359
SALES TAX	5.00%	\$2,261				
MATL MARKUP	-40.00%	(\$18,084)				
LABOR MARKUP	-13.40%		(\$3,504)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$29,387	\$22,645	\$0	\$0	\$52,032
CONTINGENCY	10.00%					\$5,203
BOND	2.50%					\$1,301
PROFIT	10.00%					\$5,203
JOB TOTAL						\$63,739

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #:	7249	
AREA:	ENTIRE BLDG	
AREA USE:	14	
HOURS/DAY	5	
DAYS/WEEK		
BUILDING VOLTAGE	277	

ELECTRIC COSTS: \$0.0211 PER KWH
DEMAND CHARGE: \$11.70 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	96 W/FIXT =	0 WATTS
4 FOOT	2 LAMP U	192 W/FIXT =	0 WATTS
8 FOOT	2 LAMP U	384 W/FIXT =	0 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FIXT =	0 WATTS
4 FOOT	0 2 LAMP U @	116 W/FIXT =	0 WATTS
8 FOOT	0 2 LAMP U @	232 W/FIXT =	0 WATTS

BASELINE ENERGY CONSUMPTION	116,226 KWH/YR	ECO ENERGY CONSUMPTION	76,124 KWH/YR
BASELINE DEMAND	394.815 MJ/YR	ECO DEMAND	273,992 MJ/YR
	30.26 KW		20.91 KW

NET ENERGY SAVINGS	122,824 MJ/YR	NET DEMAND SAVINGS	\$1,325 /YR
NET ENERGY SAVINGS	116.41 MBTU/YR	NET DOLLAR SAVINGS	\$2,045 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: 7249

AREA: OFFICE

LAMP USE:

HOURS/DAY: 8

DAYS/WEEK: 5

PEAK USE: 1 (1-YES, 2-NO)

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.74 PER KW

BUILDING VOLTAGE: 120

EXISTING INCANDESCENTS
2 LAMPS @ 750 WATTS = 1500 WATTS

FLUORESCENT FIXTURE REPLACEMENT
1 2 LAMP @ 50 WATTS = 50 WATTS

BASELINE ENERGY CONSUMPTION
3,125 KWH
11,232 MJ

ECO ENERGY CONSUMPTION
121 KWH
434 MJ

BASELINE DEMAND
1.50 KW

ECO DEMAND
0.06 KW

NET ENERGY SAVINGS
NET ENERGY SAVINGS

10,788 MJ/YR
10.23 MBTU/YR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$204 /YR
\$757 /YR

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1994

BUILDING #:		7249	INTERIOR LIGHTING: EXIT SIGN REPLACEMENT		ELECTRIC COSTS		PER KWH	
					ENERGY CHARGE		\$0.0211	
					DEMAND CHARGE		\$11.78	
							PER KW	
INCANDESCENT EXIT SIGNS			FLUORESCENT EXIT SIGNS		REPLACEMENT FIXTURE			
# EXIT SIGNS			# EXIT SIGNS		# EXIT SIGNS			
WATTAGE		30	WATTAGE		WATTAGE			
BASELINE ENERGY CONSUMPTION		1.734 KWH/YR	ECO ENERGY CONSUMPTION		289 KWH/YR			
		5.244 MJ/YR			1.041 MJ/YR			
BASELINE DEMAND		0.20 KW	ECO DEMAND		0.03 KW			
NET ENERGY SAVINGS		5.203 MJ/YR	NET DEMAND SAVINGS		\$23 /YR			
NET ENERGY SAVINGS		4.93 MJ/YR	NET DOLLAR SAVINGS		\$54 /YR			

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1944

BUILDING #: 7240
 AREA: HANGAR BAY
 HOURS/DAY: 14
 DAYS/WEEK: 5
 PEAK USE: 1 (1-YES, 2-NO)
 BUILDING VOLTAGE: 277

ELECTRIC COSTS
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.28 PER KW

EXISTING FIXTURES		REPLACEMENT FIXTURES	
INCAND @	WATTS =	0 MPS @	WATTS =
70 @	200	0 MPS @	0 WATTS
454 @	454	70 @	3200 WATTS
1075 @	1075	84 @	3200 WATTS
BASELINE ENERGY CONSUMPTION		ECO ENERGY CONSUMPTION	
772,918 KWH		117,208 KWH	
905.875 KW		427,949 MJ	
11.25 KW		32.20 KW	
BASELINE DEMAND		ECO DEMAND	

NET ENERGY SAVINGS	NET DEMAND SAVINGS	NET ENERGY SAVINGS	NET DEMAND SAVINGS
844,127 MJ/YR	844,127 MJ/YR	\$6,086 /YR	\$6,086 /YR
534.67 MBTU/YR	534.67 MBTU/YR	\$9,392 /YR	\$9,392 /YR

27-Jul-94

MeansData for Lotus

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 Estimate: Bldg. 7249 Date: 8 July 1994
 Description: Hangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 2x4 FLUOR FIXTURES					337.00	
Unit values	0.49	0.00	13.35	0.00	0.00		13.35
Totals	192.55	\$0	\$5,300	\$0	\$0		\$5,300
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					13.00	
Unit values	0.26	0.00	7.10	0.00	0.00		7.10
Totals	3.35	\$0	\$92	\$0	\$0		\$92
0207082540	DEMO, HIGH BAY FIXTURES					70.00	
Unit values	1.00	0.00	27.50	0.00	0.00		27.50
Totals	70.00	\$0	\$1,925	\$0	\$0		\$1,925
UC2 SITEWORK	266	\$0	\$7,317	\$0	\$0		\$7,317

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 32W LAMP R S					92.00	
Unit values	0.94	26.74	22.52	0.00		0.00	49.26
Totals	86.57	\$2,460	\$2,072	\$0		\$0	\$4,531
1661302300	SUR FLUOR STRIP 4' W 2 32W LAMP R S					(qty) Ea.	
Unit values	1.00	28.65	23.82	0.00		0.00	52.47
Totals	0.00	\$0	\$0	\$0		\$0	\$0
1661304291	HIGH BAY, AL REFLECTOR 400W MH					70.00	EA
Unit values	3.48	295.00	95.50	0.00		0.00	390.50
Totals	243.46	\$20,650	\$6,685	\$0		\$0	\$27,335
1661307777	L.E.D. EXIT SIGN SINGLE FACE					11.00	EA
Unit values	1.00	50.00	27.50	0.00		0.00	77.50
Totals	11.00	\$550	\$303	\$0		\$0	\$853
1661309801	REC FLUOR TROFFER 2X2' W 2 32W T8-U ACRYLIC LENS					(qty) Ea.	
Unit values	1.40	88.00	38.50	0.00		0.00	126.50
Totals	0.00	\$0	\$0	\$0		\$0	\$0
1661309802	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(qty) Ea.	
Unit values	1.51	84.00	41.50	0.00		0.00	125.50
Totals	0.00	\$0	\$0	\$0		\$0	\$0
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(qty) Ea.	
Unit values	1.60	90.00	44.00	0.00		0.00	134.00
Totals	0.00	\$0	\$0	\$0		\$0	\$0
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					(qty) Ea.	
Unit values	1.70	94.00	47.00	0.00		0.00	141.00
Totals	0.00	\$0	\$0	\$0		\$0	\$0
1661309807	REC FLUOR TROFFER 1X4' W 2 32W T8 ACRYLIC LENS					165.00	EA
Unit values	1.14	73.00	31.50	0.00		0.00	104.50
Totals	166.10	\$12,045	\$3,198	\$0		\$0	\$17,243
1661309909	SUR FLUOR 1X4' W 2 32W T8					(qty) Ea.	
Unit values	1.14	86.00	31.50	0.00		0.00	117.50

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1561309910	INDUSTRIAL FLUOR 1X4' W 2 32W T8					
	TWO-PIECE REFLECTOR					
Unit values	1.14	60.00	31.50	0.00	122.00 EA	91.50
Totals	139.08	\$7,320	\$3,543	\$0	\$0	\$11,163
1561309912	SUR FLOR 2X4' W 3 32W T8					
Unit values	1.40	115.00	38.50	0.00	19.00 EA	153.50
Totals	26.60	\$2,185	\$732	\$0	\$0	\$2,917
1561366041	COMP FLUOR LAMP, 18 W TWIN TUBE					
	GLOBE ASSEMBLY					
Unit values	0.13	14.50	3.44	0.00	(qty) EA	17.94
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16 ELECTRICAL		995	\$45,210	\$18,832	SC	\$0	\$64,042
ESTIMATE TOTAL		961	\$45,210	\$26,149	SC	\$0	\$71,359
SALES TAX	5.00%		\$2,261				
MATL MARKUP	-40.00%		(\$18,084)				
LABOR MARKUP	-13.40%			(\$3,504)			
EQUIPT MARKUP	0.00%				SC		
SUB MARKUP	0.00%					\$0	
TOTAL BEFORE CONTINGENC			\$29,167	\$22,645	SC	\$0	\$52,032
CONTINGENCY	10.00%						\$5,203
SCND	2.50%						\$1,301
PROFIT	10.00%						\$5,203
JOB TOTAL							\$63,739

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 Estimate: Bldg. 7249 Date: 8 July 1994
 Description: Mangar
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
U02 SITEWORK	266	\$0	\$7,317	\$0	\$0	\$7,317
U16 ELECTRICAL	695	\$45,210	\$18,832	\$0	\$0	\$64,042
TOTAL	961	\$45,210	\$26,149	\$0	\$0	\$71,359
SALES TAX	5.00%	\$2,261				
MATL MARKUP	-40.00%	(\$18,084)				
LABOR MARKUP	-13.40%		(\$3,504)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$29,387	\$22,645	\$0	\$0	\$52,032
CONTINGENCY	10.00%					\$5,203
BOND	2.50%					\$1,301
PROFIT	10.00%					\$5,203
JOB TOTAL						\$63,739

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1984

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 7281
AREA: OFFICE BLDG

AREA USE: 10
HOURS/DAY: 5
DAYS/WEEK

BUILDING VOLTAGE: 120

ELECTRIC COSTS:
ENERGY CHARGE: \$0.0211 PER KW-HR
DEMAND CHARGE: \$11.78 PER KW

EXISTING FIXTURE DATA

2 FOOT	2 LAMP U	96 W/FXT =	0 WATTS
4 FOOT	1 LAMP @	48 W/FXT =	0 WATTS
	4 2 LAMP @	90 W/FXT =	360 WATTS
	3 LAMP @	144 W/FXT =	0 WATTS
	112 4 LAMP @	160 W/FXT =	20160 WATTS
8 FOOT	2 LAMP @	120 W/FXT =	0 WATTS

MAX. SELENE ENG. - GV CONSUMPTION

192.017 MWYR

22.53 KW

REPLACEMENT FIXTURE DATA

2 FOOT	0 2 LAMP U @	58 W/FXT =	0 WATTS
4 FOOT	0 1 LAMP @	28 W/FXT =	0 WATTS
	4 1 LAMP @	29 W/FXT =	116 WATTS
	0 3 LAMP @	87 W/FXT =	0 WATTS
	112 2 LAMP @	58 W/FXT =	6496 WATTS
8 FOOT	0 2 LAMP @	125 W/FXT =	0 WATTS

ECO ENERGY CONSUMPTION

17.181 KW-HR/YR

61.869 MWYR

NET ENERGY SAVINGS
190,179 MWYR

NET ENERGY SAVINGS
123.38 MWYR

NET DEMAND SAVINGS
NET DOLLAR SAVINGS

\$1,306.97R
\$2,729.97R

FORT CAMPBELL LIGHTING SURVEY

FCO 1: INTERIOR/EXTERIOR LIGHTING
19 AUGUST 1994

INTERIOR LIGHTING: EXIT SIGN REPLACEMENT

BUILDING #: 7281
ELECTRICAL COSTS:
ENERGY CHARGE \$0.0211 PER KW/H
DEMAND CHARGE \$11.78 PER KW

INCANDESCENT EXIT SIGNS # EXIT SIGNS	FLUORESCENT EXIT SIGNS # EXIT SIGNS	REPLACEMENT FIXTURE # EXIT SIGNS	WATTAGE
5	18	5	3

BASELINE ENERGY CONSUMPTION	ECO ENERGY CONSUMPTION	ECO ENERGY DEMAND
1,732 KWH/YR 6.307 MBTU/YR 0.26 KW	131 KWH/YR 473 MBTU/YR 0.02 KW	

NET ENERGY SAVINGS	NET DEMAND SAVINGS
5.834 MBTU/YR	\$26 /YR
5.53 MBTU/YR	\$69 /YR

27-Jul-94

MeansData for Lotus

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*****
Estimate:      Bldg. 7281      Date:      8 July 1994
Description:   Storage / Admin
Project:       Lighting Study  Bid Date:
Location:      Ft. Campbell    Job #:
Sq. footage:   City Indx:
*****

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
0207082121	DEMO, 12x4 FLOOR FIXTURES					116.00	
Unit values	0.49	0.00	13.35	0.00	0.00	13.3	
Totals	56.25	\$0	\$1,549	\$0	\$0	\$1,54	
0207082123	DEMO, INCAND FIXTURES / EXIT SIGNS					5.00	
Unit values	0.26	0.00	7.10	0.00	0.00	7.1	
Totals	1.29	\$0	\$36	\$0	\$0	\$	
U02 SITEWORK	58	\$0	\$1,585	\$0	\$0	\$1.58	

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MeansData for Lot#

F

Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
1661302200	SUR FLUOR STRIP 4' W 1 40W LAMP R S					(Qty) Ea.	
Unit values	0.94	26.74	22.52	0.00	0.00		49.
Totals	0.00	\$0	\$0	\$0	\$0		
1661302200	SUR FLUOR STRIP 4' W 2 40W LAMP R S					(Qty) Ea.	
Unit values	1.00	25.65	23.62	0.00	0.00		52.
Totals	0.00	\$0	\$0	\$0	\$0		
1661307777	D.E.D. EXIT SIGN RETROFIT KIT SINGLE EACH					5.00 EA	
Unit values	1.00	50.00	27.50	0.00	0.00		77.
Totals	5.00	\$250	\$138	\$0	\$0		\$3
1661309801	REC FLUOR TROFFER 2X2' W 2 31W T8-0 ACRYLIC LENS					(Qty) EA	
Unit values	1.40	88.00	35.50	0.00	0.00		126.
Totals	0.00	\$0	\$0	\$0	\$0		
1661309802	REC FLUOR TROFFER 2X4' W 1 32W T8 ACRYLIC LENS W REFLECTOR					4.00 EA	
Unit values	1.51	84.00	41.50	0.00	0.00		125.
Totals	6.04	\$336	\$166	\$0	\$0		\$5
1661309803	REC FLUOR TROFFER 2X4' W 3 32W T8 ACRYLIC LENS					(Qty) EA	
Unit values	1.60	90.00	44.00	0.00	0.00		134.
Totals	0.00	\$0	\$0	\$0	\$0		
1661309804	REC FLUOR TROFFER 2X4' W 4 32W T8 ACRYLIC LENS					0.00 EA	
Unit values	1.70	94.00	47.00	0.00	0.00		142.
Totals	0.00	\$0	\$0	\$0	\$0		
1661309805	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS W/ REFLECTOR					112.00 EA	
Unit values	1.51	106.50	41.50	0.00	0.00		14.
Totals	169.12	\$11,928	\$4,648	\$0	\$0		\$16.1
1661309807	REC FLUOR TROFFER 2X4' W 2 32W T8 ACRYLIC LENS					(Qty) EA	
Unit values	1.14	73.00	31.50	0.00	0.00		104.
Totals	0.00	\$0	\$0	\$0	\$0		
1661309809	SUR FLUOR 2X4' W 2 32W T8					(Qty) EA	
Unit values	1.14	86.00	31.50	0.00	0.00		117.

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MeansData for Lotus

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Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661309910	INDUSTRIAL FLUOR 1X4' W 2 32W TB					
	TWO-PIECE REFLECTOR					
Unit values	1.14	90.00	31.50	0.00	(qty) EA	121.50
Totals	0.00	\$0	\$0	\$0	\$0	\$0
1661388042	COMP FLUOR FIX, 2 13 W FL					
	WALL / CEILING MOUNT					
Unit values	1.00	25.50	27.50	0.00	(qty) EA	53.00
Totals	0.00	\$0	\$0	\$0	\$0	\$0

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MeansData for Lotus

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Line #	Description	Manhours	Matl	Labor	Equipment	Sub	Total
U16	ELECTRICAL	151	\$12,514	\$4,952	\$0	\$0	\$17,466
	ESTIMATE TOTAL	239	\$12,514	\$6,537	\$0	\$0	\$19,051
	SALES TAX	5.00%	\$626				
	MATL MARKUP	-40.00%	\$5,006				
	LABOR MARKUP	-12.40%		(\$875)			
	EQUIPT MARKUP	0.00%			\$0		
	SUB MARKUP	0.00%				\$0	
	TOTAL BEFORE CONTINGENC		\$8,134	\$5,661	\$0	\$0	\$13,795
	CONTINGENCY	10.00%					\$1,360
	BOND	2.50%					\$345
	PROFIT	10.00%					\$1,380
	JOB TOTAL						\$16,829

27-Jul-94

MeansData for Lotus

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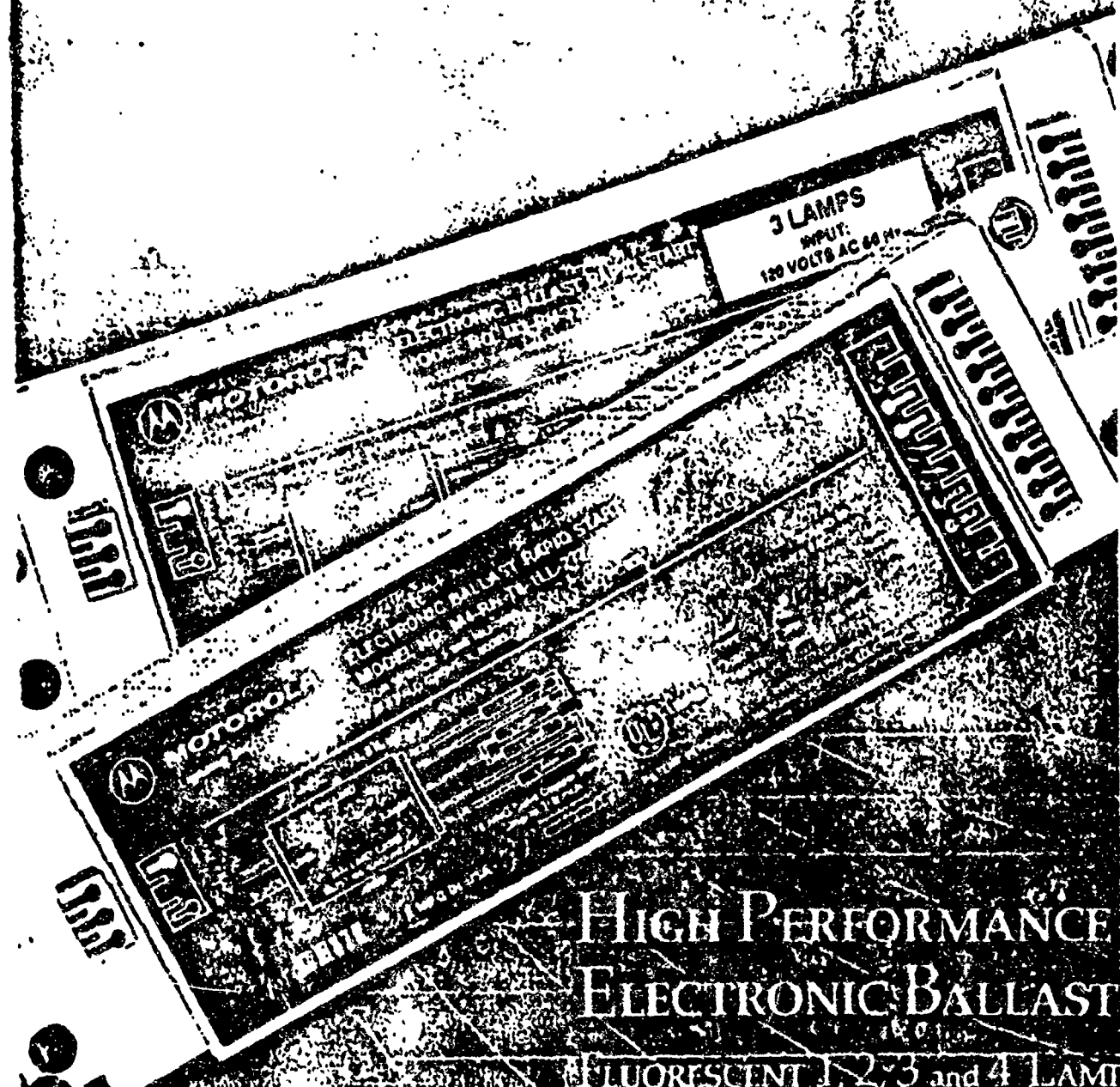
 Estimate: Bldg. 7281 Date: 8 July 1994
 Description: Storage / Admin.
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

	Manhours	Matl	Labor	Equipment	Sub	Total
UG2 SITEWORK	58	\$0	\$1,585	\$0	\$0	\$1,585
UG ELECTRICAL	181	\$12,514	\$4,952	\$0	\$0	\$17,466
TOTAL	239	\$12,514	\$6,537	\$0	\$0	\$19,051
SALES TAX	5.00%	\$626				
MATL MARKUP	-40.00%	(\$5,006)				
LABOR MARKUP	-13.40%		(\$876)			
EQUIPT MARKUP	0.00%			\$0		
SUB MARKUP	0.00%				\$0	
TOTAL BEFORE CONTINGENC		\$8,134	\$5,661	\$0	\$0	\$13,795
CONTINGENCY	10.00%					\$1,380
BOND	2.50%					\$345
PROFIT	10.00%					\$1,380
JOB TOTAL						\$16,899

MOTOROLA

Logistics, Inc.



HIGH PERFORMANCE ELECTRONIC BALLAST

FLUORESCENT 1, 2, 3 and 4 LAMP
RAPID START

PAGE 3-25

Total Customer Satisfaction

MOTOROLA

Lighting Inc.

Total Customer Satisfaction

CUSTOMER SUPPORT
1-800-MLI-0089

HIGH PERFORMANCE FEATURES

Power Factor	Greater than 95
Total Harmonic Distortion	Less than 1%
Third Harmonic Distortion	Less than 6%
Lamp Current Crest Factor	Less than 1.5
Lamp Current Frequency	Greater than 25 KHz
Lamp Configuration	Series
Lamp Flicker	Less than 2%, No Visible
Sound Rating	Class A
Projected Life	20 years plus
Connector	Poke-in wire trac for 18 gauge (solid wire)
Weight	1.2 lbs
EMI	Meets FCC Part 18, Subpart C

CODES

UL Listed: Class P
Transient Protection: Meets ANSI C42.41 Cat. A
 (Formerly IEEE 387)

PART NUMBER DESCRIPTION

MODEL NUMBER EXPLANATION

M - J - R - N - D - LL - 275

120

QUALITY

Motorola's goal of acceptable quality is at Six Sigma or no more than 3.4 defects per million opportunities. Motorola Lighting Inc. designed its electronic ballast to meet the most rigorous performance standards at world class levels. This translates into a highly robust product that goes through extensive environmental stress testing to assure our customers of very low initial defect levels (less than 0.1%) and high reliability (greater than 300,000 hours Mean Time to Failure--MTTF).

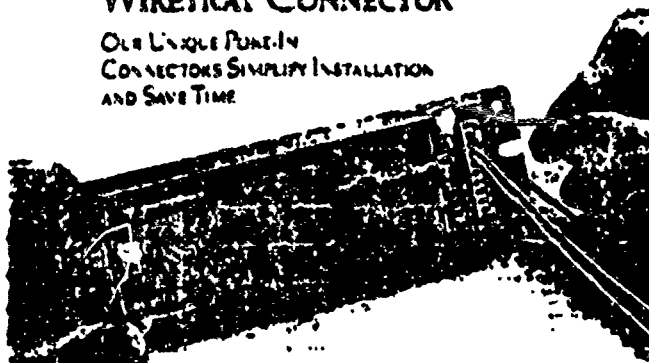
The economic ballast life is 20 years when operated at 49°C ambient temperature. Operation of MJD's ballast at 50°C may derate life expectancy by 25%.

Six Sigma Quality means "world class" in all that we do at Motorola Lighting Inc., which is part of our commitment to TOTAL CUSTOMER SATISFACTION.



WIRETRAP CONNECTOR

Old Linxle Plug-In
Connectors Simplify Installation
and Save Time



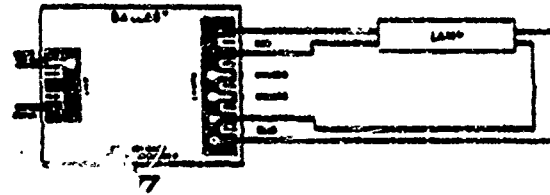
RAPID START BALLASTS

Lamp Type	Rated Lamp Voltage (V)	Lamp Length (FT)	Model No.	Line Voltage (V)	Max. Line Current (A)	Typical Line Current (A)	Typical Input Power (W)	Typical Open Enclosed	Min. Starting Temp (°F)
1 LAMP T8									
F32T8	32	4	M1-RN-T8-ILL-120	120	.31	.24	28	28	50°
F32T8	32	4	M1-RN-T8-ILL-277	277	.13	.11	25	25	50°
F25T8	25	3	M1-RN-T8-ILL-120	120	.24	.19	23	22	50°
F25T8	25	3	M1-RN-T8-ILL-277	277	.10	.08	23	22	50°
F17T8	17	2	M1-RN-T8-ILL-120	120	.17	.13	16	15	50°
F17T8	17	2	M1-RN-T8-ILL-277	277	.07	.06	16	15	50°
2 LAMP T8									
F32T8	32	4	M2-RN-T8-ILL-120	120	.53	.41	51	51	50°
F32T8	32	4	M2-RN-T8-ILL-277	277	.24	.21	37	36	50°
F25T8	25	3	M2-RN-T8-ILL-120	120	.42	.40	48	45	50°
F25T8	25	3	M2-RN-T8-ILL-277	277	.18	.17	46	44	50°
F17T8	17	2	M2-RN-T8-ILL-120	120	.27	.26	32	29	50°
F17T8	17	2	M2-RN-T8-ILL-277	277	.12	.10	34	31	50°
2 LAMP T12									
F40T12	40	4	M2-RN-T12-ILL-120	120	.84	.59	71	69	50°
F40T12	40	4	M2-RN-T12-ILL-277	277	.37	.28	69	67	50°
F36T12	36	4	M2-RN-T12-ILL-120	120	.74	.50	60	59	50°
F36T12	36	4	M2-RN-T12-ILL-277	277	.33	.21	54	57	50°
F40T10	40	4	M2-RN-T12-ILL-120	120	.84	.56	72	71	50°
F40T10	40	4	M2-RN-T12-ILL-277	277	.37	.28	70	68	50°
F36T12	36	3	M2-RN-T12-ILL-120	120	.48	.44	53	52	50°
F36T12	36	3	M2-RN-T12-ILL-277	277	.21	.19	52	50	50°
F30T12	30	3	M2-RN-T12-ILL-120	120	.40	.37	44	42	50°
F30T12	30	3	M2-RN-T12-ILL-277	277	.17	.16	43	42	50°
3 LAMP T8									
F32T8	32	4	M3-RN-T8-ILL-120	120	.78	.78	86	87	50°
F32T8	32	4	M3-RN-T8-ILL-277	277	.33	.32	80	80	50°
F25T8	25	3	M3-RN-T8-ILL-120	120	.61	.58	75	67	50°
F25T8	25	3	M3-RN-T8-ILL-277	277	.26	.25	66	66	50°
F17T8	17	2	M3-RN-T8-ILL-120	120	.39	.38	47	46	50°
F17T8	17	2	M3-RN-T8-ILL-277	277	.16	.14	44	41	50°
3 LAMP T12									
F40T12	40	4	M3-RN-T12-ILL-120	120	.82	.80	107	105	50°
F40T12	40	4	M3-RN-T12-ILL-277	277	.43	.36	105	103	50°
F36T12	36	4	M3-RN-T12-ILL-120	120	.83	.77	81	80	50°
F36T12	36	4	M3-RN-T12-ILL-277	277	.41	.33	80	80	50°
F40T10	40	4	M3-RN-T12-ILL-120	120	.89	.82	103	107	50°
F40T10	40	4	M3-RN-T12-ILL-277	277	.43	.36	107	105	50°
F36T12	36	3	M3-RN-T12-ILL	120	.78	.78	88	78	50°
F36T12	36	3	M3-RN-T12-ILL	277	.37	.29	78	78	50°
F30T12	30	3	M3-RN-T12-ILL	120	.71	.67	67	65	50°
F30T12	30	3	M3-RN-T12-ILL-277	277	.33	.24	66	66	50°
4 LAMP T8									
F32T8	32	4	M4-RN-T8-ILL-120	120	1.04	1.02	121	118	50°
F32T8	32	4	M4-RN-T8-ILL-277	277	.44	.43	118	115	50°
F25T8	25	3	M4-RN-T8-ILL-120	120	.81	.80	95	91	50°
F25T8	25	3	M4-RN-T8-ILL-277	277	.38	.34	83	80	50°
F17T8	17	2	M4-RN-T8-ILL-120	120	.55	.49	67	64	50°
F17T8	17	2	M4-RN-T8-ILL-277	277	.22	.16	61	59	50°

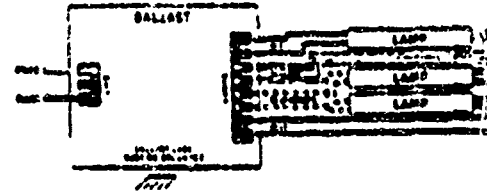
Notes: Will Operate the U Shaped Equipment of the Above Lamps Test Data from independent Test Lab Available on Request from Factory

WIRING DIAGRAMS AND BALLAST DIMENSIONS

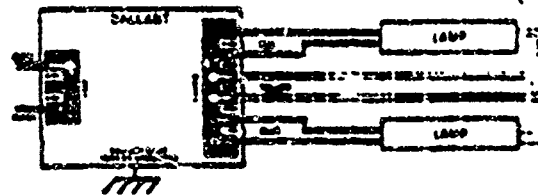
WIRING DIAGRAMS



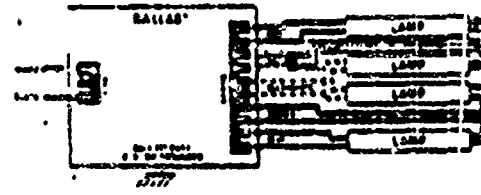
1 LAMP



3 LAMP

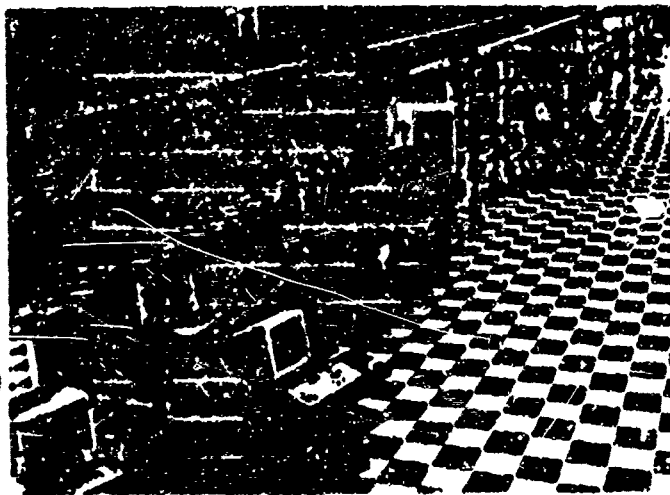
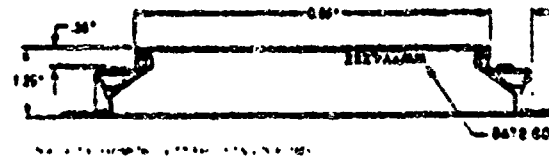
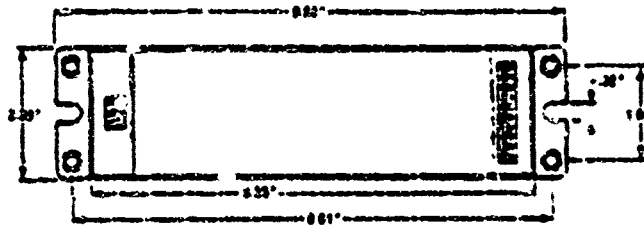


2 LAMP



4 LAMP

BALLAST DIMENSIONS*



Our new ballast design is available in Ballast (Type) dimensions for 12 x 12



MOTOROLA
Lighting Inc.

367 Chicago Parkway
Bullington, N.C. 27006
1-800-368-7025

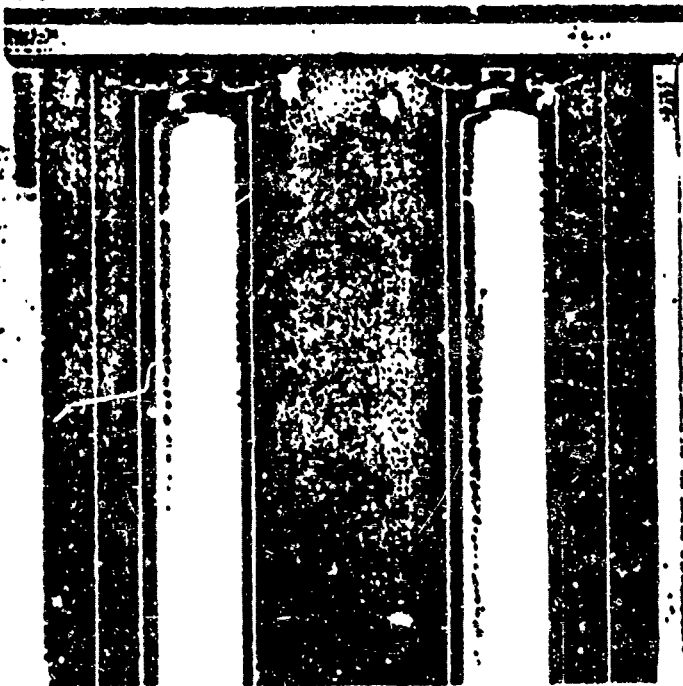
For more information, write to:
Motorola Lighting Inc.
1985 Motorola Inc.

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of Motorola Inc. © 1985 Motorola Inc. RAR-2-2

AA-1111-1-00



**SILVERLUXTM
REFLECTORS
CUT YOUR
LIGHTING ENERGY
COSTS IN HALF.**



SEVEN

CLIPPING

MOVING

SECTION

SEVEN

CLIPPING

MOVING

SECTION

SEVEN

CLIPPING

MOVING

SECTION

SEVEN

CLIPPING

MOVING

SECTION

SILVERLUX FLUORESCENT REFLECTORS

- Cut energy costs in half or enhance lighting levels
- Pay for themselves in two years or less
- Install and maintain easily
- Warranted for 5 years
- Attractive low-rate financing available
- Available from national or wide dealer network

For more information just call.

3M is a part of the Green Lights Program—a voluntary non-regulatory program organized by the Environmental Protection Agency (EPA). This program encourages corporations to take advantage of new lighting technologies and design principles that benefit the environment. 3M is a unique member of the program because it participates as both a consumer of electrical lighting energy and as a developer of electrical lighting products. Silverlux reflectors demonstrate 3M's commitment to energy-efficient lighting technologies that reduce energy consumption and pollution while delivering the same or better lighting.

Cut costs, not lighting.

Innovation working for you

3M Construction Markets
3M Center Bldg. 225-45-03
St. Paul, MN 55145-0000
612-736-2188

Page 3 of 26

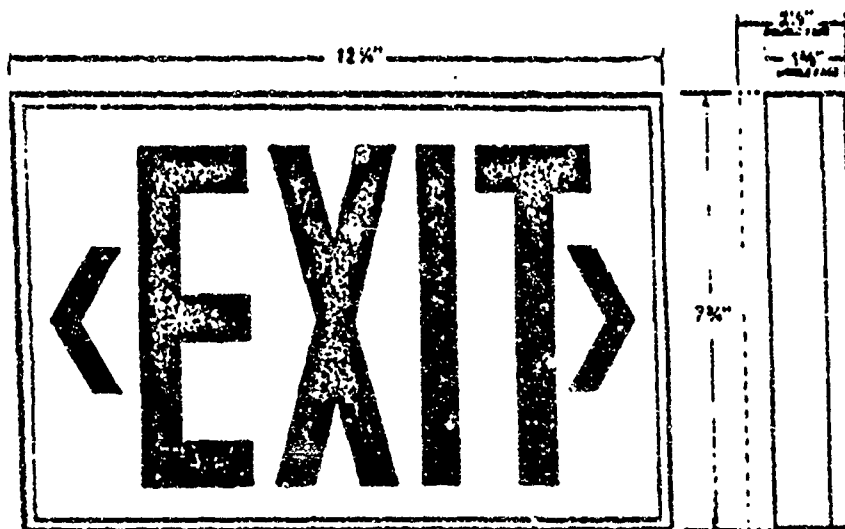
Job 6429 Fiche 3 02/04/99 06:55AM
Operator: Machine: Code: Job Name: 1001

Main Table DTICNEW MPT
Break Table
Rep: 1 P: 0 Block 3717 Offset 61819

Evenlite LED Exit Lights

EV SERIES

The LED of the 21st Century



No Ifs, Ands or Buts.

This is exactly how the EVENLITE 2000 appears! Perfectly even illumination is produced by indirect lighting, so that the LED's are invisible, with no hot spots. All this is provided in the slimmest sign on the market with integral charger and battery.

No competitor comes close to these combined specifications:

- Less than 3 watts total power per face
- Perfect light distribution across face
- Single face only 1 1/2" thick
- Double face only 2 1/4" thick
- Remote unit only 1/2" thick
- Multiple LED lamps with 20 year unconditional guarantee
- NICAD batteries with 5 year guarantee
- Aluminum housing for light weight and strength
- Universal mount
- Baked enamel, vinyl clad or satin anodized finishes
- Polycarbonate faceplate

Patent Pending



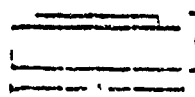
SHIELD SOURCE INCORPORATED
320 N.W. Avenue, Grasonville, Maryland 21638
Tel: 410-827-8272 Fax: 410-827-8637

PAGE 3-26.

PIONEER

1011 Series

Economy!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens
- White enamel finished steel pan
- 120 volt class "P" ballast
- Lamp(s) included

OPTIONS

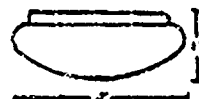
- High power factor ballast
- 277 volt ballast
- Theft proof screws

MODEL	WATTAGE	L	D
PL1011	100-250	10"	5"
PL1014	100-250	14"	5"

ECLIPSE

5012 Series

Now!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens
- White enamel finished steel pan
- 120 volt class "P" ballast
- Lamp(s) included

OPTIONS

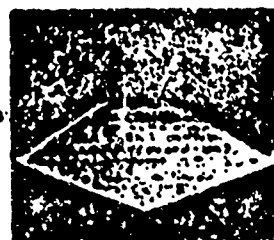
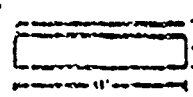
- High power factor ballast
- 277 volt ballast
- Theft proof screws

MODEL	WATTAGE	L	D
EC 5012	100-250	12"	4 1/2"
EC 5015	100-250	15"	4 1/2"

DISCOVERY

3011 Series

Traditional Square!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens
- White enamel finished steel pan
- 120 volt class "P" ballast
- Lamp(s) included

OPTIONS

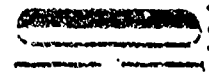
- High power factor ballast
- 277 volt ballast
- Theft proof screws

MODEL	WATTAGE	L	D
DS 3011	100-250	11"	11"
DS 3015	100-250	15"	15"

EXPLORER

1110 Series

Low Profile!



UL List

STANDARD FEATURES

- White vandal resistant lexan lens
- Black lexan housing
- 120 volt class "P" ballast
- White powder coated reflector
- Lamp(s) included

OPTIONS

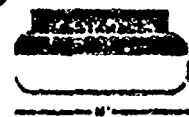
- High power factor ballast
- 277 volt ballast
- White lexan housing

MODEL	WATTAGE	L	D
EP 1110	100-250	11"	9 1/2"

PLUTO

1303 Series

Vandal!



UL List

STANDARD FEATURES

- White heavy gauged lexan lens
- Corrosion-proof lexan base
- White powder coated reflector
- Lamp(s) included
- 120 volt class "P" ballast

OPTIONS

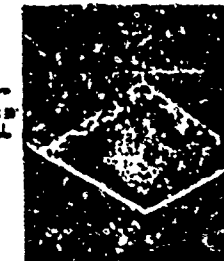
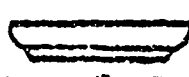
- High power factor ballast
- 277 volt ballast

MODEL	WATTAGE	L	D
PL 1303	100-250	13"	4 1/2"

COSMO

1400 Series

Low Profile!



UL List

STANDARD FEATURES

- White lexan lens
- White vandal-proof lexan lens
- 120 volt class "P" ballast
- Lamp(s) included

OPTIONS

- High power factor ballast
- 277 volt ballast

MODEL	WATTAGE	L	D
CS 1400	100-250	14"	13 1/2"

PAGE 3-26

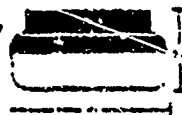
INCON INDUSTRIES



UL Listed

ARMSTRONG

1802 Series
Vandal-Lite!



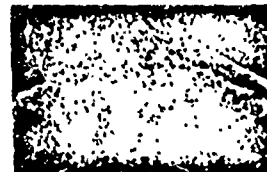
STANDARD FEATURES

- White heavy gauged lexan lens.
- Corrosion-proof lexan base.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.

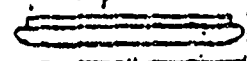
MODEL#	WATTAGE	L	D
AR 1802	100, 150, 250, 300	10"	4.25"



UL Listed

STRATUS

2011 Series
Low Profile Square!



STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

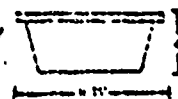
MODEL#	WATTAGE	L	D
ST 2011	100, 250, 300, 400	11"	3.75"
ST 2014	250, 300, 400, 500	14"	12.75"



UL Listed

CENTURY

1010 Series
Vandal-Lite!



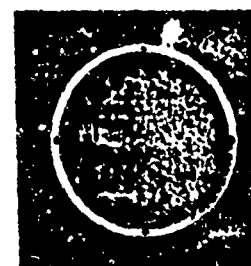
STANDARD FEATURES

- White extra strong lexan lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

MODEL#	WATTAGE	L	D
CE 1010	100, 150, 250	16.75"	4"



UL Listed

NOVA

200 Series
Euno-Lite!



STANDARD FEATURES

- Opt polycarbonate diffuser.
- White corrosion-proof lexan base.
- White powder coated reflector.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- Black or white cage.
- Black lexan housing.
- Theft proof screws.

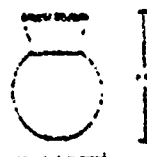
MODEL#	WATTAGE	L	D
NV 200	100, 150, 250	18"	5"



UL Listed

HALO

303 Series
Economy!



STANDARD FEATURES

- Durable polycarbonate base.
- Available in white or black.
- White 6" acrylic globe.
- 120 volt class "P" ballast.
- Lamp included.

OPTIONS

- Clear prismatic jar.
- White acrylic jar.
- HPF module.

MODEL#	WATTAGE	L	D
HL 303 Globe	100, 150, 250	6.1"	6"
HL 303 Jar	100, 150, 250	7.5"	4"



UL Listed

KENNEDY

030 Series
Vandal-Lite!



STANDARD FEATURES

- Brushed satin cast aluminum housing.
- Durable white lexan jar.
- 120 volt class "P" ballast.
- Lamp included.

OPTIONS

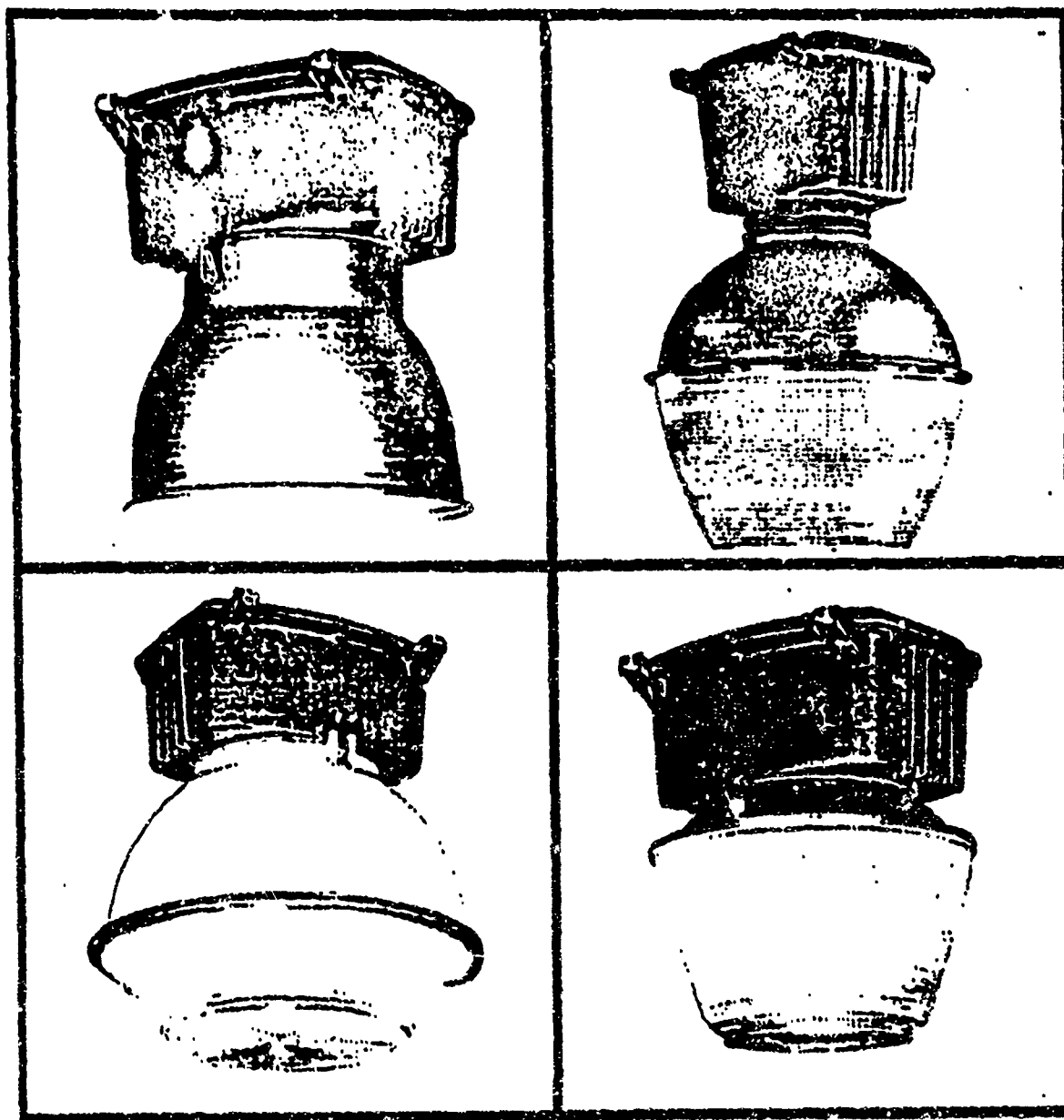
- Clear prismatic jar.
- 6" round globe.
- High power factor ballast.
- Pull chain.

MODEL#	WATTAGE	L	D
KD 030 Jar	100, 150, 250	10.5"	4"
KD 030 Globe	100, 150, 250	10.5"	6.25"

LOWBAY

Low to medium wattage industrial luminaire.

Ideal for areas having restricted ceiling heights and wet locations.



Name	
Address	
City	
State	
Zip	
Telephone	
Fax	
E-mail	

LOWBAY

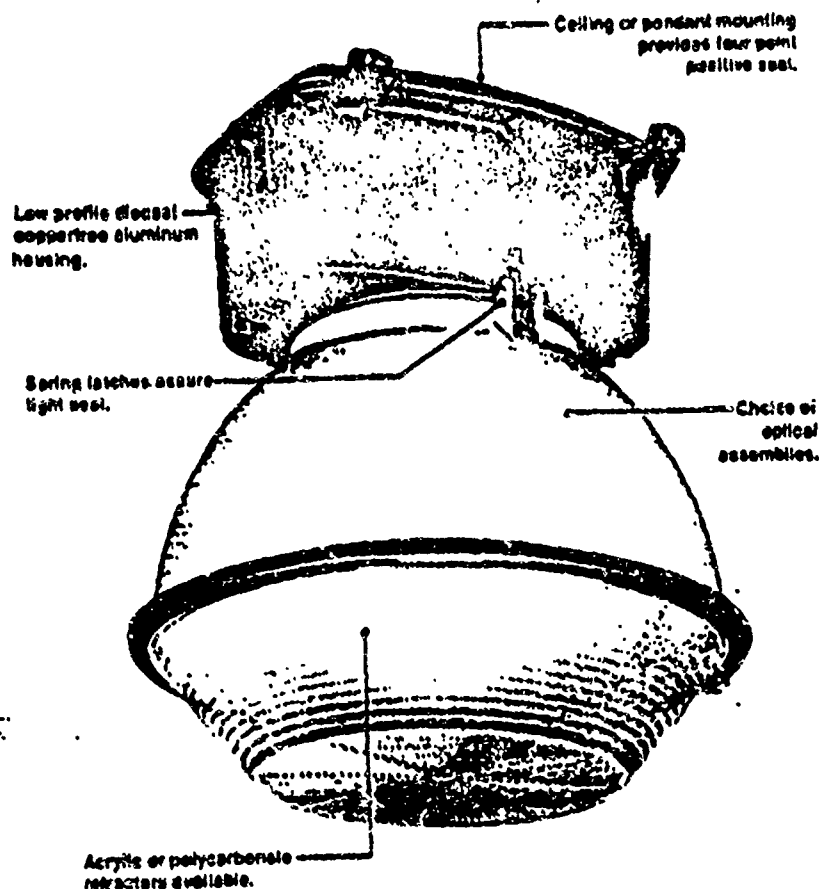
Provides optimum efficiency at low mounting heights.

Lowbay offers energy-efficient solutions to a wide range of industrial and warehousing installation requirements. This industrial-grade HID luminaire provides both efficient distribution and exceptional brightness control for task lighting or in areas where low headroom is a problem. A choice of optical equipment allows Lowbay to meet a variety of spacing and performance requirements to satisfy even the toughest specification.

Features:

Mounting — Choice of a 1/2" NPT threaded pendant, balanced pendant or ceiling mounting. All mounting adapters have two hinges and four clasp screws, thereby providing four-point compression on the gasket for a positive seal. In addition, the offset pendant hub ensures plumb mounting.

Ballast housing — Die cast copper-free aluminum low profile housing with an efficient heat sink design for cool operation and long ballast life. Husbell's Lowbay is rugged for quick installation to mounting adapters allowing easy access to large splice compartment. Finished in durable gray Lekrocoat™.



Optical Equipment — Lowbay offers a choice of open or enclosed reflectors, acrylic or polycarbonate refractors and reflector/refractor combinations.

1. **Open/Enclosed Reflector** — High purity spun aluminum finished in Anodized. Lens on the enclosed reflector is thermal shock and impact resistant for added protection.
2. **Reflector/Refractor Combination** — Reflector portion is high purity spun aluminum finished in white Lekrocoat for low brightness and high reflectivity. Its refractor gives symmetrical (Type I) distribution and is available in either acrylic or polycarbonate.
3. **Refractors** — UV stabilized acrylic refractors are available for symmetrical (Type I) or asymmetrical (Type II) distribution. Also available in polycarbonate for vandal resistance.

4. **Large Reflector/Refractor** — Spun aluminum reflector has Anodized finish and polycarbonate refractor. Available in Type II or Type I distribution.

All optical assemblies except large reflector/refractor attach to the ballast housing by two positive spring latches. Large assembly has a fully threaded neck.

Reliable, Long Life Ballast — Class "H" insulated, -20°F starting (-40°F HPS) 60 HZ. high power factor ballast isolated from the optical chamber for optimum performance and long life. 50 HZ ballasts available, consult factory.

Additional Features — U.L. listed for wet locations and 40°C ambient operation.

The following literary materials are available with the London Series. They must be ordered separately with the letter by adding the appropriate call number 01200 Catalogue List.

* To identify various models: 1. 1-120V 2. 200V 3. 240V 4. 277V 5. 480V

The following 8200000000 are 870-400 in the 600000000000 They may be
 870000000000

Entrying Ingress	Description
81-7 MOON LOBBY	Weg paid for rental parking spot for car. Cops & woman's' b's were parked nearby across Cops & woman's' b's were

[illegible]

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 216. 217. 218. 219. 220. 221. 222. 223. 224. 225. 226. 227. 228. 229. 230. 231. 232. 233. 234. 235. 236. 237. 238. 239. 240. 241. 242. 243. 244. 245. 246. 247. 248. 249. 250. 251. 252. 253. 254. 255. 256. 257. 258. 259. 260. 261. 262. 263. 264. 265. 266. 267. 268. 269. 270. 271. 272. 273. 274. 275. 276. 277. 278. 279. 280. 281. 282. 283. 284. 285. 286. 287. 288. 289. 290. 291. 292. 293. 294. 295. 296. 297. 298. 299. 300. 301. 302. 303. 304. 305. 306. 307. 308. 309. 310. 311. 312. 313. 314. 315. 316. 317. 318. 319. 320. 321. 322. 323. 324. 325. 326. 327. 328. 329. 330. 331. 332. 333. 334. 335. 336. 337. 338. 339. 340. 341. 342. 343. 344. 345. 346. 347. 348. 349. 350. 351. 352. 353. 354. 355. 356. 357. 358. 359. 360. 361. 362. 363. 364. 365. 366. 367. 368. 369. 370. 371. 372. 373. 374. 375. 376. 377. 378. 379. 380. 381. 382. 383. 384. 385. 386. 387. 388. 389. 390. 391. 392. 393. 394. 395. 396. 397. 398. 399. 400. 401. 402. 403. 404. 405. 406. 407. 408. 409. 410. 411. 412. 413. 414. 415. 416. 417. 418. 419. 420. 421. 422. 423. 424. 425. 426. 427. 428. 429. 430. 431. 432. 433. 434. 435. 436. 437. 438. 439. 440. 441. 442. 443. 444. 445. 446. 447. 448. 449. 450. 451. 452. 453. 454. 455. 456. 457. 458. 459. 460. 461. 462. 463. 464. 465. 466. 467. 468. 469. 470. 471. 472. 473. 474. 475. 476. 477. 478. 479. 480. 481. 482. 483. 484. 485. 486. 487. 488. 489. 490. 491. 492. 493. 494. 495. 496. 497. 498. 499. 500. 501. 502. 503. 504. 505. 506. 507. 508. 509. 510. 511. 512. 513. 514. 515. 516. 517. 518. 519. 520. 521. 522. 523. 524. 525. 526. 527. 528. 529. 530. 531. 532. 533. 534. 535. 536. 537. 538. 539. 540. 541. 542. 543. 544. 545. 546. 547. 548. 549. 550. 551. 552. 553. 554. 555. 556. 557. 558. 559. 560. 561. 562. 563. 564. 565. 566. 567. 568. 569. 570. 571. 572. 573. 574. 575. 576. 577. 578. 579. 580. 581. 582. 583. 584. 585. 586. 587. 588. 589. 590. 591. 592. 593. 594. 595. 596. 597. 598. 599. 600. 601. 602. 603. 604. 605. 606. 607. 608. 609. 610. 611. 612. 613. 614. 615. 616. 617. 618. 619. 620. 621. 622. 623. 624. 625. 626. 627. 628. 629. 630. 631. 632. 633. 634. 635. 636. 637. 638. 639. 640. 641. 642. 643. 644. 645. 646. 647. 648. 649. 650. 651. 652. 653. 654. 655. 656. 657. 658. 659. 660. 661. 662. 663. 664. 665. 666. 667. 668. 669. 670. 671. 672. 673. 674. 675. 676. 677. 678. 679. 680. 681. 682. 683. 684. 685. 686. 687. 688. 689. 690. 691. 692. 693. 694. 695. 696. 697. 698. 699. 700. 701. 702. 703. 704. 705. 706. 707. 708. 709. 710. 711. 712. 713. 714. 715. 716. 717. 718. 719. 720. 721. 722. 723. 724. 725. 726. 727. 728. 729. 730. 731. 732. 733. 734. 735. 736. 737. 738. 739. 740. 741. 742. 743. 744. 745. 746. 747. 748. 749. 750. 751. 752. 753. 754. 755. 756. 757. 758. 759. 760. 761. 762. 763. 764. 765. 766. 767. 768. 769. 770. 771. 772. 773. 774. 775. 776. 777. 778. 779. 780. 781. 782. 783. 784. 785. 786. 787. 788. 789. 790. 791. 792. 793. 794. 795. 796. 797. 798. 799. 800. 801. 802. 803. 804. 805. 806. 807. 808. 809. 810. 811. 812. 813. 814. 815. 816. 817. 818. 819. 820. 821. 822. 823. 824. 825. 826. 827. 828. 829. 830. 831. 832. 833. 834. 835. 836. 837. 838. 839. 840.

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High-Bay Industrial Lighting

ORDERING SEQUENCE

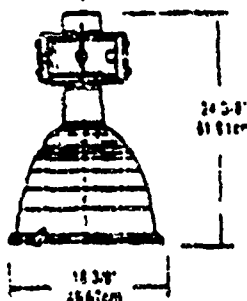
| CATALOG NUMBER | VOLTAGE | OPTIONS (Factory Installed) |
|----------------------|----------------------|-----------------------------|
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- ☐ TE 175M E17C
- ☐ TE 175M E17M
- ☐ TE 175M E17S
- ☐ TE 175M E17W

- ☐ 120
- ☐ 208
- ☐ 240
- ☐ 277
- ☐ 480
- ☐ TB

- Shipped Installed in Fixture
- ☐ SF Simple Fuse (120-277V) w/ TB
 - ☐ DF Double Fuse (208-240-480V) w/ TB
 - ☐ EC Emergency Circuit (lamp not included)
 - ☐ QRS Quartz Restrike System (lamp not included)
 - ☐ QRS TD Quartz Time Delay (lamp not included)
 - ☐ NA 65°C Ambient Operation
 - ☐ CR Corrosion Resistant Finish (concealer)
 - ☐ CRT Corrosion Resistant Finish (reflector)
 - ☐ TEF Teflon Finished Reflector
 - ☐ TOS Thin-Wire Outer Box
 - ☐ TOSM Thin-Wire Outer Box Plug-in
 - ☐ PPM Pendant Power Plug-in
 - ☐ LCPM Loco Cord & Plug for PPM & PPM
 - ☐ LCPM Loco 3' Cord & 15A NEMA Twist Lock Plug
 - ☐ NCPM Loco 3' Cord & 15A NEMA Twist Lock Plug
 - ☐ RCPM Loco 3' Cord & 15A NEMA Twist Lock Plug
 - ☐ RCPM Loco 3' Cord & 15A NEMA Twist Lock Plug
 - ☐ LCPM Loco Cord and Plug for LCPM
 - ☐ LUCPSM LUCP w/ Simple Fuse (120-277V) w/ TB
 - ☐ LUCPDM LUCP w/ Double Fuse (208-240-480V) w/ TB
 - ☐ UCP Universal Cord & Plug for UCP
 - ☐ UCPSM UCP w/ Simple Fuse (120-277V)
 - ☐ UCPSM UCP w/ Double Fuse (208-240-480V)
 - ☐ TR Remote Ballast
 - ☐ TRC2 Thin-Wire Cable
 - ☐ WL Wet Location UL Label
 - ☐ C73T Corning C73 Pattern Tapered Glass Lens
 - ☐ SSS Stainless Steel Screws
 - ☐ SLR Stainless Steel Lens Rings
 - ☐ UP UP LPM
 - ☐ CP Charcoal Filter

C = Concentrating
M = Medium
S = Spread
W = Widespread



| DIST. | SHOWN |
|-------|-------|
| E17C | 1.0 |
| E17M | 1.4 |
| E17S | 1.6 |
| E17W | 2.0 |

Weight: 22 lbs (10 kg)

NOTES

- * May also be ordered with 5, 10, 15 cord lengths
- * Max. Fuse Rating (120-277V)
- * Quartz lamp wattage will exceed ballast wattage rating
- * May be ordered as accessory. MUST see individual Accessories Sheet for ordering information
- * 36' cable to connect ballast to remote ballast
- * 20 amp standard 480V
- * Day change distribution
- * Compu-Light
- * Not available w/ TB

For Complete Description & Application Information See Options & Accessories Sheet (OIA)

Shipped Separately

- ☐ HMM Fixture Holes - Made
- ☐ HMMG Grounded Fixture Holes - Made
- ☐ LPM Fixture Loco - Made
- ☐ LPMG Grounded Fixture Loco - Made
- ☐ TPM Thin-Wire Power Module
- ☐ PPM Pendant Power Module
- ☐ UPM Universal Power Module
- ☐ UPM1 UPM w/ Adapter Plate
- ☐ UPM2 UPM w/ Wiring Block
- ☐ UPM3 UPM w/ Adapter Plate & Wiring Block
- ☐ WG Wire Guard Aluminum Reflector
- ☐ LG Louver Glass
- ☐ DCY Cylinder Shade
- ☐ DSO Square Shade
- ☐ DMX Hexagonal Shade

ACCESSORIES (Field Installed)

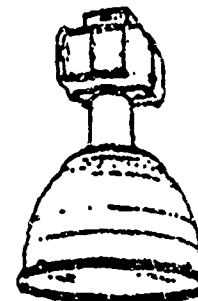
(Order as separate line item)

- | CH. NO. | Description |
|---------|--|
| WSP | Fixture Holes - Made |
| LPP | Fixture Loco - Made |
| SCS | Safety Chain Kit |
| TMB | Thin-Wire Mounting Bar - 20" x 1/2" x 1/2" |

Fixture Type

TE

METAL HALIDE
175W
12' to 20' Mounting



SPECIFICATIONS

HOUSING - Rugged, lightweight, die-cast aluminum with dark bronze polyester powder finish. Electrical components are exposed horizontally and heat-sunk to housing for cooler operation.

BALLAST - High power factor 4:1 wattage autotransformer, 180° neutral system.

OPTICS - One piece totally enclosed gas-filled Arc Tube. A spun aluminum reflector combines high efficiency with a louvered shielding angle for high performance optical control. Exclusive fluting design minimizes arc tube voltage rise. Gas-filled clear tempered glass lens which is the entrance of ambient contaminants.

INSTALLATION - Pendant splice box threaded for 3/4" conduit (standard). Complete line of mounting options and accessories available.

LISTING - UL 1572 listed for damp location and -30°C to 55°C ambient operation. UL wet location label option available.

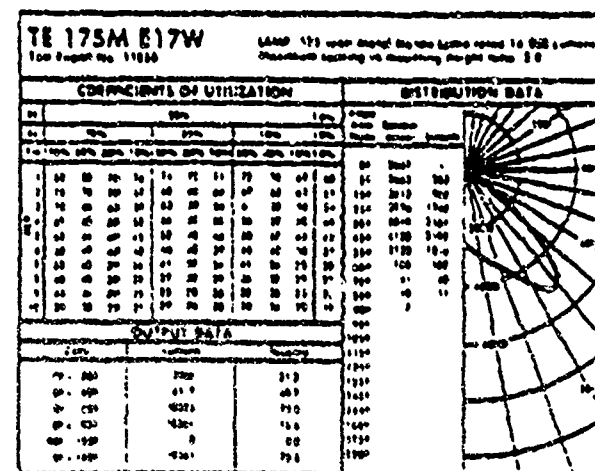
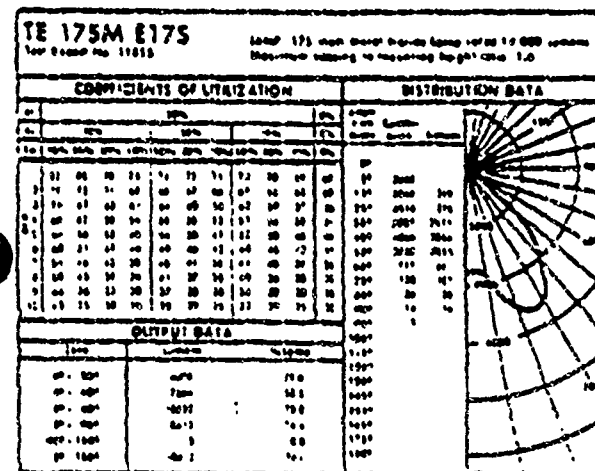
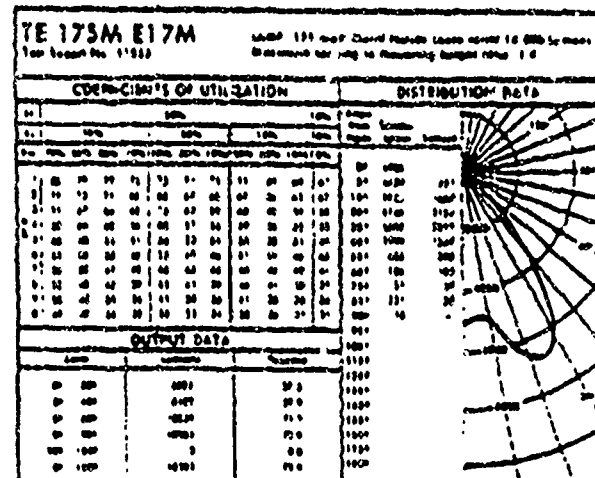
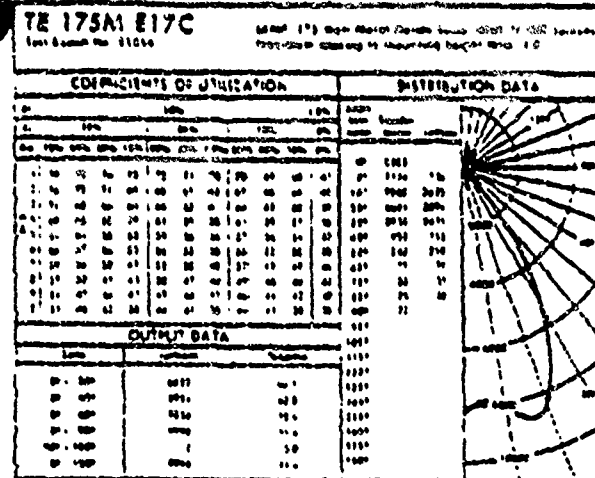
SOCKET - Porcelain vertically oriented mogul base socket with copper alloy metal plated screw shell and center contact. UL listed 1500V - 600V.

LITHONIA
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E 121

PHOTOMETRIC DATA

The charts below provide the most useful data from specific photometric tests of the specific light source and distribution pattern shown for complete results of any combination shown or other requirements contact your HI-TEK LITHONIA representative.



ELECTRICAL CHARACTERISTICS

| Wattage | Volts | Current | Power Factor | Efficiency | Life | Notes |
|---------|-------|---------|--------------|------------|-------|-------|
| 175 | 120 | 1.46 | 0.95 | 20 | 10000 | |
| 175 | 240 | 0.73 | 0.95 | 20 | 10000 | |
| 175 | 360 | 0.48 | 0.95 | 20 | 10000 | |
| 175 | 480 | 0.37 | 0.95 | 20 | 10000 | |

Rated at 10000 hours and 10000 cycles under standard test conditions. Efficiency is based on 10000 hours and 10000 cycles. Life is based on 10000 hours and 10000 cycles. Power factor is based on 10000 hours and 10000 cycles. Notes: 1. Efficiency is based on 10000 hours and 10000 cycles. 2. Life is based on 10000 hours and 10000 cycles. 3. Power factor is based on 10000 hours and 10000 cycles.

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HI-TEK
INDUSTRIAL LIGHTING
A DIVISION OF LITHONIA INDUSTRIES
P.O. BOX 1000, NEW YORK, N.Y. 10001
3-1111

PAGE 3-270

3-1111

High-Bay Industrial Lighting

ORDERING SEQUENCE

| CATALOG NUMBER | VOLTAGE | OPTIONS (Factory Installed) |
|---------------------------------------|------------------------------|--|
| <input type="checkbox"/> TE 250M E17C | <input type="checkbox"/> 120 | <input type="checkbox"/> SF Single Fuse (120 277V) No TB |
| <input type="checkbox"/> TE 250M E17M | <input type="checkbox"/> 208 | <input type="checkbox"/> DF Double Fuse (208/240 480V) No TB |
| <input type="checkbox"/> TE 250M E17S | <input type="checkbox"/> 240 | <input type="checkbox"/> EC Emergency Circuit (lamp not included) |
| <input type="checkbox"/> TE 250M E17W | <input type="checkbox"/> 277 | <input type="checkbox"/> BRST Quartz Resistor System (lamp not included) |
| | <input type="checkbox"/> 480 | <input type="checkbox"/> CRST CRST Time Delay (lamp not included) |
| | <input type="checkbox"/> TB | <input type="checkbox"/> HA 85°C Ambient Operation |
| | | <input type="checkbox"/> CR Corrosion Resistant Finish (converter) |
| | | <input type="checkbox"/> CRT Corrosion Resistant Finish (reflector) |
| | | <input type="checkbox"/> TEF Teflon Finishes Reflector |
| | | <input type="checkbox"/> TDB 3-Wire Outlet Box |
| | | <input type="checkbox"/> TDBP 3-Wire Outlet Box Plug-in |
| | | <input type="checkbox"/> PBM Pendant Box Plug-in |
| | | <input type="checkbox"/> LCPM Loop Cord & Plug for 3-P & 4-P |
| | | <input type="checkbox"/> LCPM-1 Loop 3 Cord & 1SA NEMA Two Lock Plug |
| | | <input type="checkbox"/> MCPM-1 3-P Cord & 1SA NEMA Two Lock Plug |
| | | <input type="checkbox"/> LCPM-2 Loop 3 Cord & 2-Pole RCA Connector |
| | | <input type="checkbox"/> MCPM-2 3-P Cord & 2-Pole RCA Connector |
| | | <input type="checkbox"/> LCPM-3 Loop Cord and Plug for UPM1 |
| | | <input type="checkbox"/> LUCPSP LUCP w/Single Fuse (dead front) No TB |
| | | <input type="checkbox"/> LUCPDP LUCP w/Double Fuse (dead front) No TB |
| | | <input type="checkbox"/> UCP Universal Cord & Plug for UPM |
| | | <input type="checkbox"/> UCPSP UCP w/Single Fuse (dead front) |
| | | <input type="checkbox"/> UCPDP UCP w/Double Fuse (dead front) |
| | | <input type="checkbox"/> TB Remote Ballast |
| | | <input type="checkbox"/> TRCP-1 3-Wire Cable |
| | | <input type="checkbox"/> WL Wire Location UL Label |
| | | <input type="checkbox"/> C73T Corning C73 Pattern Tempered Glass Lens |
| | | <input type="checkbox"/> SSS Stainless Steel Screws |
| | | <input type="checkbox"/> SLR Stainless Steel Lens Rings |
| | | <input type="checkbox"/> UP UP Plug |
| | | <input type="checkbox"/> CP Chrome Plating |

C = Concentrating
M = Medium
S = Spread
W = Widespread



| DISTR. | S/MH |
|--------|------|
| E17C | 1.1 |
| E17M | 1.3 |
| E17S | 1.6 |
| E17W | 1.9 |

Height 24 3/4 inch

NOTES:

- * May also be ordered with 3, 10, 15' cord lengths.
- * Multi-Tap Ballast (120 208 240 277V)
- * Quartz lamp wattage not to exceed ballast wattage rating.
- * May be ordered as accessory MUST see industrial accessories sheet for mounting information
- * 36' cable to connect cord to remote ballast
- * 20 amp standard 480V
- * May change distribution
- * Consult factory
- * See standard UL option

For Complete Description & Specifications information, See Options & Accessories Sheet 1-0-0.

Shipped Separately

- ☐ HEMP Fixture Haze - Male
- ☐ HEMP-1 Grower's Fixture Haze - Male
- ☐ LPM Fixture Lens - Male
- ☐ LPM-1 Grower's Fixture Lens - Male
- ☐ TWP 3-Wire Power Cord
- ☐ PPM Pendant Power Cord
- ☐ UPM Universal Power Cord
- ☐ UPM-1 UPM w/Adapter Plate
- ☐ UPM-2 UPM w/Adapter Plate
- ☐ UPM-3 UPM w/Adapter Plate & Wire 2-Pole
- ☐ WB Wire Seal/Aluminum Reflector
- ☐ LG Louver Guard
- ☐ GCY Cylinder Shade
- ☐ SSC Square Shade
- ☐ DMX Hexagonal Shade

ACCESSORIES (If not included)

| Qty. | Description |
|------|----------------------------------|
| REF | Fixture Haze - Female |
| LPM | Fixture Lens - Female |
| SCS | Spring Chain Kit |
| TMB | Trim Mounting Bar (Complete Kit) |

Figure 1000

TE

METAL HALIDE

250W E17C

15' to 20' H. - 1000



SPECIFICATIONS

HOUSING - Pugged, lightweight, die-cast aluminum with clear bronze polyester powder finish. Electrical components are opposed horizontally and heat-sunk to ballast housing for cooler operation.

BALLAST - High power factor Constant wattage autotransformer 180° class P insulation system.

OPTICS - One piece totally enclosed and gasketed Arc Tek II spun aluminum, anodized reflector combines high efficiency with excellent shielding angle for high performance optical control. Gasketed clear tempered glass lens shields the entrance of ambient contaminants.

INSTALLATION - Pendant spring box threads for 3/4" conduit (standard). Complete line of mounting options and accessories available.

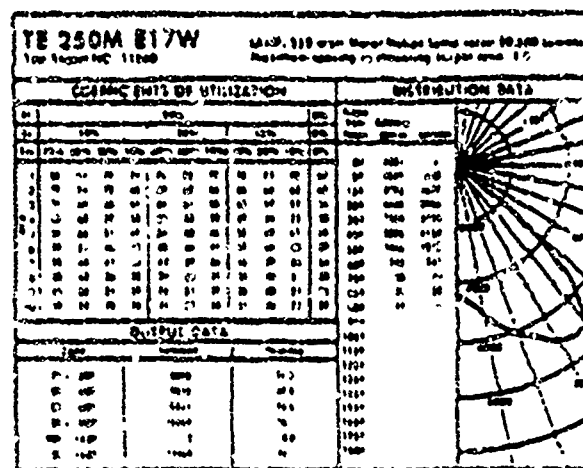
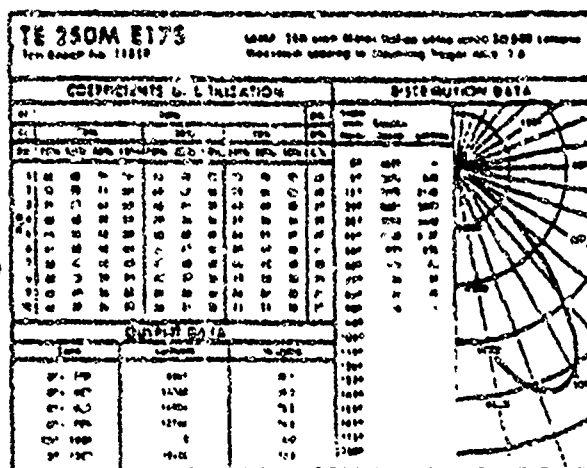
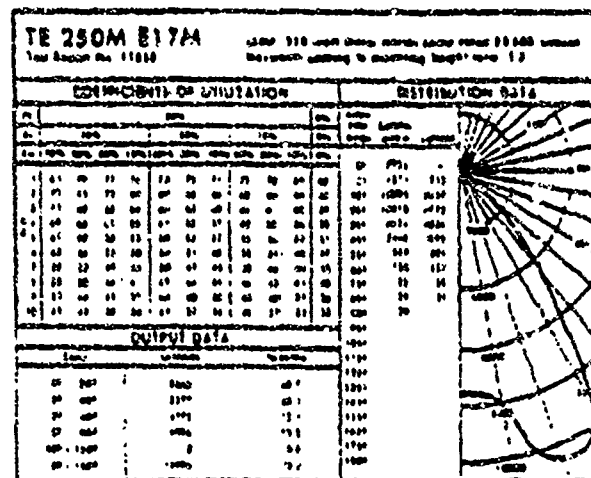
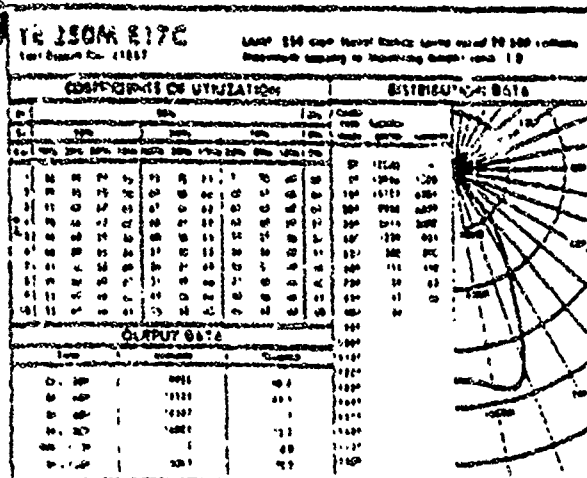
LISTING - UL 1572 listed for same location and 30°C to 55°C ambient operation UL wet location label option available.

SOCKET - Porcelain, vertically oriented mogul base socket with copper alloy nickel plated screw shell and center contact. UL listed 150W - 600V.



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The charts below provide the most useful data from specific photometric tests of the specific light sources and distribution patterns shown. For complete results of any combination shown or other requirements, contact your M.I.T.E.R. LITHONIA representative.



| DATE | DESCRIPTION | AMOUNT | BALANCE | CHECK NO. | CHECK DATE | CHECK AMOUNT | CHECK TYPE | CHECK NUMBER |
|----------|-------------|--------|---------|-----------|------------|--------------|------------|--------------|
| 10/1/78 | 100.00 | 100.00 | | | | | | |
| 10/2/78 | 50.00 | 50.00 | | | | | | |
| 10/3/78 | 25.00 | 25.00 | | | | | | |
| 10/4/78 | 75.00 | 75.00 | | | | | | |
| 10/5/78 | 100.00 | 100.00 | | | | | | |
| 10/6/78 | 50.00 | 50.00 | | | | | | |
| 10/7/78 | 25.00 | 25.00 | | | | | | |
| 10/8/78 | 75.00 | 75.00 | | | | | | |
| 10/9/78 | 100.00 | 100.00 | | | | | | |
| 10/10/78 | 50.00 | 50.00 | | | | | | |
| 10/11/78 | 25.00 | 25.00 | | | | | | |
| 10/12/78 | 75.00 | 75.00 | | | | | | |
| 10/13/78 | 100.00 | 100.00 | | | | | | |
| 10/14/78 | 50.00 | 50.00 | | | | | | |
| 10/15/78 | 25.00 | 25.00 | | | | | | |
| 10/16/78 | 75.00 | 75.00 | | | | | | |
| 10/17/78 | 100.00 | 100.00 | | | | | | |
| 10/18/78 | 50.00 | 50.00 | | | | | | |
| 10/19/78 | 25.00 | 25.00 | | | | | | |
| 10/20/78 | 75.00 | 75.00 | | | | | | |
| 10/21/78 | 100.00 | 100.00 | | | | | | |
| 10/22/78 | 50.00 | 50.00 | | | | | | |
| 10/23/78 | 25.00 | 25.00 | | | | | | |
| 10/24/78 | 75.00 | 75.00 | | | | | | |
| 10/25/78 | 100.00 | 100.00 | | | | | | |
| 10/26/78 | 50.00 | 50.00 | | | | | | |
| 10/27/78 | 25.00 | 25.00 | | | | | | |
| 10/28/78 | 75.00 | 75.00 | | | | | | |
| 10/29/78 | 100.00 | 100.00 | | | | | | |
| 10/30/78 | 50.00 | 50.00 | | | | | | |
| 10/31/78 | 25.00 | 25.00 | | | | | | |
| 11/1/78 | 75.00 | 75.00 | | | | | | |
| 11/2/78 | 100.00 | 100.00 | | | | | | |
| 11/3/78 | 50.00 | 50.00 | | | | | | |
| 11/4/78 | 25.00 | 25.00 | | | | | | |
| 11/5/78 | 75.00 | 75.00 | | | | | | |
| 11/6/78 | 100.00 | 100.00 | | | | | | |
| 11/7/78 | 50.00 | 50.00 | | | | | | |
| 11/8/78 | 25.00 | 25.00 | | | | | | |
| 11/9/78 | 75.00 | 75.00 | | | | | | |
| 11/10/78 | 100.00 | 100.00 | | | | | | |
| 11/11/78 | 50.00 | 50.00 | | | | | | |
| 11/12/78 | 25.00 | 25.00 | | | | | | |
| 11/13/78 | 75.00 | 75.00 | | | | | | |
| 11/14/78 | 100.00 | 100.00 | | | | | | |
| 11/15/78 | 50.00 | 50.00 | | | | | | |
| 11/16/78 | 25.00 | 25.00 | | | | | | |
| 11/17/78 | 75.00 | 75.00 | | | | | | |
| 11/18/78 | 100.00 | 100.00 | | | | | | |
| 11/19/78 | 50.00 | 50.00 | | | | | | |
| 11/20/78 | 25.00 | 25.00 | | | | | | |
| 11/21/78 | 75.00 | 75.00 | | | | | | |
| 11/22/78 | 100.00 | 100.00 | | | | | | |
| 11/23/78 | 50.00 | 50.00 | | | | | | |
| 11/24/78 | 25.00 | 25.00 | | | | | | |

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1862. It is a copy of the original letter, and is signed by Abraham Lincoln. The letter is addressed to the Senate and House of Representatives, and is dated January 3, 1862. The letter is a copy of the original letter, and is signed by Abraham Lincoln. The letter is addressed to the Senate and House of Representatives, and is dated January 3, 1862.



LITHONIA
HI-TEK

11-1-73
AUGUST 1973, 10:00 AM, 10:10 AM
10:10 AM, 10:10 AM, 10:10 AM

7-11-60

3 14.174079.072

25

ORDERING SEQUENCE

| CATALOG NUMBER | VOLTAGE | OPTIONS (Refer to page 202) |
|----------------|---------|-----------------------------|
|----------------|---------|-----------------------------|

/ / /

- C TE 400M E22N
C TE 400M E22C
C TE 400M E17M
C TE 400M E17S
C TE 400M E17W

- | | |
|-----|-----|
| 128 | 128 |
| 208 | 208 |
| 248 | 248 |
| 277 | 277 |
| 442 | 442 |
| 737 | 737 |

Shipped: Estimated in Figure

- [illegible]

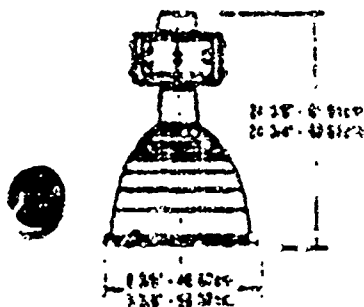
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- [illegible]

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1000000 73 1000000000 (100 000000)

[illegible]

4. WATER
5. CONSTITUTION
6. WORLD
7. SCIENCE
8. WINDSWEPT



| DATE | TIME |
|------|------|
| 8:14 | 2.8 |
| 8:20 | 1.0 |
| 8:34 | 1.6 |
| 8:48 | 1.6 |
| 8:54 | 1.9 |

4000 62 31 55072 707
8:3 200, 75 100

REF:

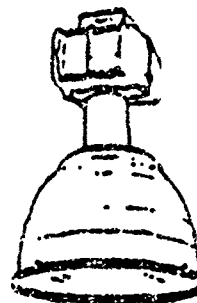
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For Complete Description of Apparatus
see Appendix, List of Apparatus
Page 10

Figure 100

TE

**METAL HALIDE
400W ENCLOSED
20' to 30' Mounting**



SPECIFICATIONS

HOUSING - rugged, lightweight die-cast aluminum with dark bronze polyester powder finish. Electrical components are disposed horizontally and fast-locked to lateral housing for easier operation.

BALLAST - High power factor Constant
voltage autotransformer 100% class M
insulation system

OPTICS - One piece totally enclosed and gaskealed ArFz II 3000 aluminum anodized reflector combines high efficiency with extended shelf life for high performance optical service. Gaskealed clear tempered glass lens shields the entrance of element.

INSTALLATION - Put can price for 170000
for 3' concrete island. Complete lot of
materials, labor and installation cost.

LISTING - UL 52 rated for damp location
and 0°C to 50°C ambient operation. UL wet
location and explosion available.

LOCKET. Portulaca veneta by CHERRYED MS.
 DATE 1800. W. 14. 1800. 1800. 1800. 1800.
 1800. 1800. 1800. 1800. 1800. 1800.
 1800. 1800. 1800. 1800. 1800. 1800.



**LITHONIA
HI-TEX**

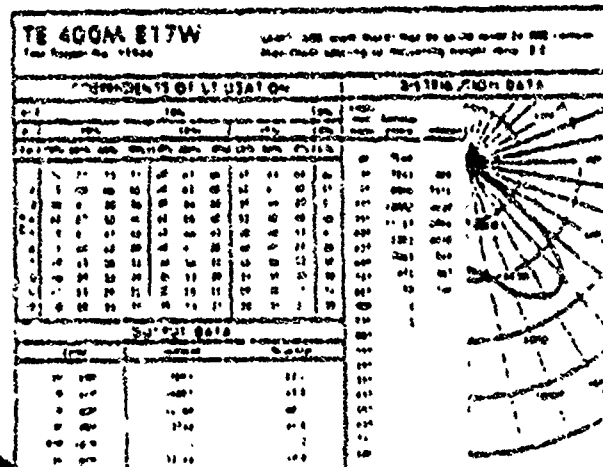
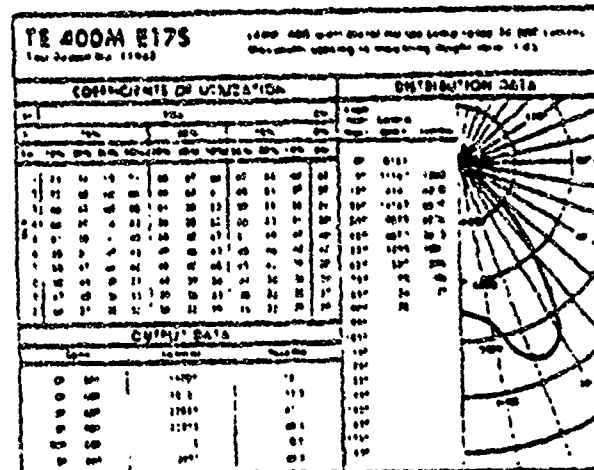
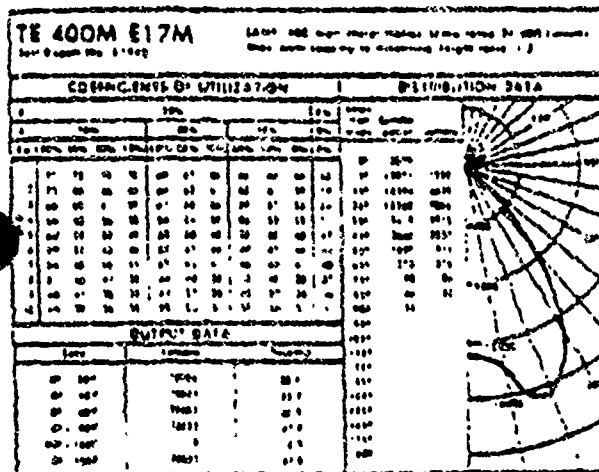
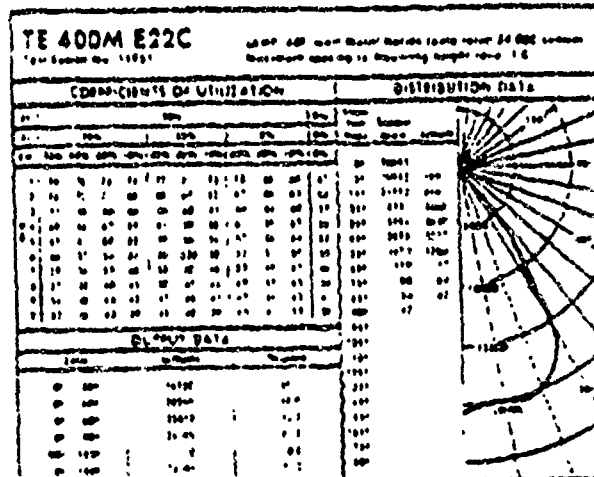
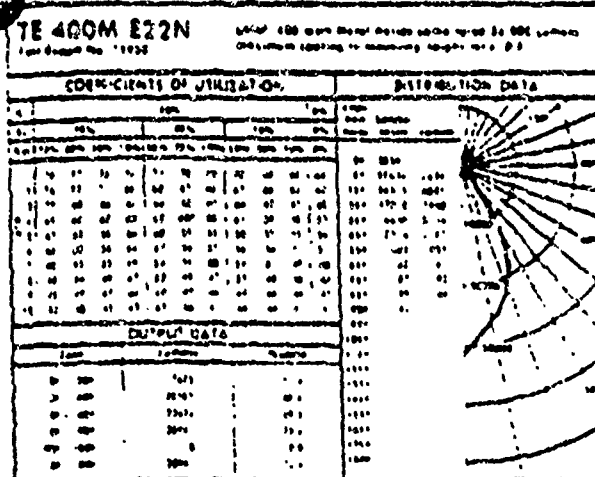
PAGE 1-273

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232
145

PHOTOMETRIC DATA

The charts below provide the most useful data from specific photometric tests of the specific light sources and distribution patterns shown for complete results of any combination shown or other requirements, consult your LITHONIA representative.



ELECTRICAL CHARACTERISTICS

| Wattage | Volts | Current | Power Factor | Efficiency | Life | Notes |
|---------|-------|---------|--------------|------------|--------|-------|
| 400 | 120 | 3.33 | 0.95 | 85 | 10,000 | |
| 400 | 277 | 1.44 | 0.95 | 85 | 10,000 | |
| 400 | 575 | 0.69 | 0.95 | 85 | 10,000 | |

Based on typical 400 watt metal halide lamp rated 34,000 lumens. Actual efficiency, life, and power factor may vary. Consult your LITHONIA representative for more information.



ADDRESSES: LITHONIA LIGHTING CO., INC.
P.O. BOX 100, LITHONIA, GEORGIA 30058
TELEPHONE: (404) 942-1111
FAX: (404) 942-1112

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CATALOG NUMBER

114

- ☐ TE 10900M E22C
- ☐ TE 10000M E22M
- ☐ TE 10000M E22S

၁။ ဇာတိမြို့နယ်
၂။ မန္တလေး
၃။ ၁၉၂၂



REF ID: A6362

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• **THE**

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For Complete Description & Application
Instructions See Section 6 Resumes on
Page I-C.2.

2. 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609 2610 2611 2612 2613 2614 2615 2616 2617 2618 2619 2620 2621 2622 2623 2624 2625 2626 2627 2628 2629 2630 2631 2632 2633 2634 2635 2636 2637 2638 2639 2640 2641 2642 2643 2644 2645 2646 2647 2648 2649 2650 2651 2652 2653 2654 2655 2656 2657 2658 2659 2660 2661 2662 2663 2664 2665 2666 2667 2668 2669 2670 2671 2672 2673 2674 2675 2676 2677 2678 2679 2680 2681 2682 2683 2684 2685 2686 2687 2688 2689 2690 2691 2692 2693 2694 2695 2696 2697 2698 2699 2700 2701 2702 2703 2704 2705 2706 2707 2708 2709 2710 2711 2712 2713 2714 2715 2716 2717 2718 2719 2720 2721 2722 2723 2724 2725 2726 2727 2728 2729 2730 2731 2732 2733 2734 2735 2736 2737 2738 2739 2740 2741 2742 2743 2744 2745 2746 2747 2748 2749 2750 2751 2752 2753 2754 2755 2756 2757 2758 2759 2760 2761 2762 2763 2764 2765 2766 2767 2768 2769 2770 2771 2772 2773 2774 2775 2776 2777 2778 2779 2780 2781 2782 2783 2784 2785 2786 2787 2788 2789 2790 2791 2792 2793 2794 2795 2796 2797 2798 2799 2800 2801 2

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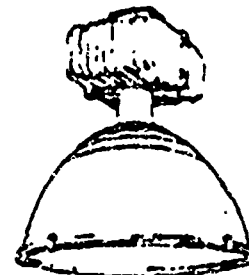
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| DATE | 10/11/84 |
| TIME | 10:10 AM |
| LOCATION | 10:10 AM |
| STATE | 10:10 AM |
| TIME | 10:10 AM |

Future Year:

TE

**METAL HALIDE
1000W ENCLOSED
25' to 45' Mounting**



SPECIFICATIONS

HOUSING - Rugged, lightweight die-cast aluminum with dark bronze polyester powder finish. Electrical components are protected hermetically and heat-treated to offset housing for cooler operation.

BALLAST - High power steel. Consistent
range with other 18" class
modular systems

OPTICS - One piece totally enclosed and gasfilled Arg Tech lamp assembly or units reflector combines high efficiency with extended working life for optimum performance optical control Gasfilled clear tempered glass lens on this the entrance to ambient environment

INSTALLATION - Fits into 2" x 2" box without
for 3/4" concrete slabs. Comes with one of
mounting options and accessories available

LISTING - UL 1572 listed for camp location
and 32°C to 55°C ambient operation. UL will
location label on 7/6/87 available

SECRET - Personnel verifiably oriented regard
being secret with access policy & controlled
access ther and carrier contact. All listed
'SECRET - 6X1'



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PHOTOMETRIC DATA

The chart below provides the most useful data from each of the preceding tests of the specific light sources and distribution patterns shown for complete results of any combination shown or other requirements (contact your M.I.T.R. Liaison representative).

TE 1000M E22C

JAN 1988

1000M E22C

1000M E22C

1000M E22C

COEFFICIENTS OF UTILIZATION

DISTRIBUTION DATA

TE 1000M E22M

Model: 1000M E22M
 Frequency: 1000M E22M
 Power: 1000M E22M

CONCENTRATION OF UTILIZATION

DISTRIBUTION DATA

[illegible]

ELECTRICAL CHARACTERISTICS

| 1970-71 | 1971-72 | 1972-73 | 1973-74 | 1974-75 | 1975-76 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 | 1986-87 | 1987-88 | 1988-89 | 1989-90 | 1990-91 | 1991-92 | 1992-93 | 1993-94 | 1994-95 | 1995-96 | 1996-97 | 1997-98 | 1998-99 | 1999-00 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 | 2006-07 | 2007-08 | 2008-09 | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 | 2019-20 | 2020-21 | 2021-22 | 2022-23 | 2023-24 | 2024-25 | 2025-26 | 2026-27 | 2027-28 | 2028-29 | 2029-30 | 2030-31 | 2031-32 | 2032-33 | 2033-34 | 2034-35 | 2035-36 | 2036-37 | 2037-38 | 2038-39 | 2039-40 | 2040-41 | 2041-42 | 2042-43 | 2043-44 | 2044-45 | 2045-46 | 2046-47 | 2047-48 | 2048-49 | 2049-50 | 2050-51 | 2051-52 | 2052-53 | 2053-54 | 2054-55 | 2055-56 | 2056-57 | 2057-58 | 2058-59 | 2059-60 | 2060-61 | 2061-62 | 2062-63 | 2063-64 | 2064-65 | 2065-66 | 2066-67 | 2067-68 | 2068-69 | 2069-70 | 2070-71 | 2071-72 | 2072-73 | 2073-74 | 2074-75 | 2075-76 | 2076-77 | 2077-78 | 2078-79 | 2079-80 | 2080-81 | 2081-82 | 2082-83 | 2083-84 | 2084-85 | 2085-86 | 2086-87 | 2087-88 | 2088-89 | 2089-90 | 2090-91 | 2091-92 | 2092-93 | 2093-94 | 2094-95 | 2095-96 | 2096-97 | 2097-98 | 2098-99 | 2099-00 | 2100-01 | 2101-02 | 2102-03 | 2103-04 | 2104-05 | 2105-06 | 2106-07 | 2107-08 | 2108-09 | 2109-10 | 2110-11 | 2111-12 | 2112-13 | 2113-14 | 2114-15 | 2115-16 | 2116-17 | 2117-18 | 2118-19 | 2119-20 | 2120-21 | 2121-22 | 2122-23 | 2123-24 | 2124-25 | 2125-26 | 2126-27 | 2127-28 | 2128-29 | 2129-30 | 2130-31 | 2131-32 | 2132-33 | 2133-34 | 2134-35 | 2135-36 | 2136-37 | 2137-38 | 2138-39 | 2139-40 | 2140-41 | 2141-42 | 2142-43 | 2143-44 | 2144-45 | 2145-46 | 2146-47 | 2147-48 | 2148-49 | 2149-50 | 2150-51 | 2151-52 | 2152-53 | 2153-54 | 2154-55 | 2155-56 | 2156-57 | 2157-58 | 2158-59 | 2159-60 | 2160-61 | 2161-62 | 2162-63 | 2163-64 | 2164-65 | 2165-66 | 2166-67 | 2167-68 | 2168-69 | 2169-70 | 2170-71 | 2171-72 | 2172-73 | 2173-74 | 2174-75 | 2175-76 | 2176-77 | 2177-78 | 2178-79 | 2179-80 | 2180-81 | 2181-82 | 2182-83 | 2183-84 | 2184-85 | 2185-86 | 2186-87 | 2187-88 | 2188-89 | 2189-90 | 2190-91 | 2191-92 | 2192-93 | 2193-94 | 2194-95 | 2195-96 | 2196-97 | 2197-98 | 2198-99 | 2199-00 | 2200-01 | 2201-02 | 2202-03 | 2203-04 | 2204-05 | 2205-06 | 2206-07 | 2207-08 | 2208-09 | 2209-10 | 2210-11 | 2211-12 | 2212-13 | 2213-14 | 2214-15 | 2215-16 | 2216-17 | 2217-18 | 2218-19 | 2219-20 | 2220-21 | 2221-22 | 2222-23 | 2223-24 | 2224-25 | 2225-26 | 2226-27 | 2227-28 | 2228-29 | 2229-30 | 2230-31 | 2231-32 | 2232-33 | 2233-34 | 2234-35 | 2235-36 | 2236-37 | 2237-38 | 2238-39 | 2239-40 | 2240-41 | 2241-42 | 2242-43 | 2243-44 | 2244-45 | 2245-46 | 2246-47 | 2247-48 | 2248-49 | 2249-50 | 2250-51 | 2251-52 | 2252-53 | 2253-54 | 2254-55 | 2255-56 | 2256-57 | 2257-58 | 2258-59 | 2259-60 | 2260-61 | 2261-62 | 2262-63 | 2263-64 | 2264-65 | 2265-66 | 2266-67 | 2267-68 | 2268-69 | 2269-70 | 2270-71 | 2271-72 | 2272-73 | 2273-74 | 2274-75 | 2275-76 | 2276-77 | 2277-78 | 2278-79 | 2279-80 | 2280-81 | 2281-82 | 2282-83 | 2283-84 | 2284-85 | 2285-86 | 2286-87 | 2287-88 | 2288-89 | 2289-90 | 2290-91 | 2291-92 | 2292-93 | 2293-94 | 2294-95 | 2295-96 | 2296-97 | 2297-98 | 2298-99 | 2299-00 | 2300-01 | 2301-02 | 2302-03 | 2303-04 | 2304-05 | 2305-06 | 2306-07 | 2307-08 | 2308-09 | 2309-10 | 2310-11 | 2311-12 | 2312-13 | 2313-14 | 2314-15 | 2315-16 | 2316-17 | 2317-18 | 2318-19 | 2319-20 | 2320-21 | 2321-22 | 2322-23 | 2323-24 | 2324-25 | 2325-26 | 2326-27 | 2327-28 | 2328-29 | 2329-30 | 2330-31 | 2331-32 | 2332-33 | 2333-34 | 2334-35 | 2335-36 | 2336-37 | 2337-38 | 2338-39 | 2339-40 | 2340-41 | 2341-42 | 2342-43 | 2343-44 | 2344-45 | 2345-46 | 2346-47 | 2347-48 | 2348-49 | 2349-50 | 2350-51 | 2351-52 | 2352-53 | 2353-54 | 2354-55 | 2355-56 | 2356-57 | 2357-58 | 2358-59 | 2359-60 | 2360-61 | 2361-62 | 2362-63 | 2363-64 | 2364-65 | 2365-66 | 2366-67 | 2367-68 | 2368-69 | 2369-70 | 2370-71 | 2371-72 | 2372-73 | 2373-74 | 2374-75 | 2375-76 | 2376-77 | 2377-78 | 2378-79 | 2379-80 | 2380-81 | 2381-82 | 2382-83 | 2383-84 | 2384-85 | 2385-86 | 2386-87 | 2387-88 | 2388-89 | 2389-90 | 2390-91 | 2391-92 | 2392-93 | 2393-94 | 2394-95 | 2395-96 | 2396-97 | 2397-98 | 2398-99 | 2399-00 | 2400-01 | 2401-02 | 2402-03 | 2403-04 | 2404-05 | 2405-06 | 2406-07 | 2407-08 | 2408-09 | 2409-10 | 2410-11 | 2411-12 | 2412-13 | 2413-14 | 2414-15 | 2415-16 | 2416-17 | 2417-18 | 2418-19 | 2419-20 | 2420-21 | 2421-22 | 2422-23 | 2423-24 | 2424-25 | 2425-26 | 2426-27 | 2427-28 | 2428-29 | 2429-30 | 2430-31 | 2431-32 | 2432-33 | 2433-34 | 2434-35 | 2435-36 | 2436-37 | 2437-38 | 2438-39 | 2439-40 | 2440-41 | 2441-42 | 2442-43 | 2443-44 | 2444-45 | 2445-46 | 2446-47 | 2447-48 | 2448-49 | 2449-50 | 2450-51 | 2451-52 | 2452-53 | 2453-54 | 2454-55 | 2455-56 | 2456-57 | 2457-58 | 2458-59 | 2459-60 | 2460-61 | 2461-62 | 2462-63 | 2463-64 | 2464-65 | 2465-66 | 2466-67 | 2467-68 | 2468-69 | 2469-70 | 2470-71 | 2471-72 | 2472-73 | 2473-74 | 2474-75 | 2475-76 | 2476-77 | 2477-78 | 2478-79 | 2479-80 | 2480-81 | 2481-82 | 2482-83 | 2483-84 | 2484-85 | 2485-86 | 2486-87 | 2487-88 | 2488-89 | 2489-90 | 2490-91 | 2491-92 | 2492-93 | 2493-94 | 2494-95 | 2495-96 | 2496-97 | 2497-98 | 2498-99 | 2499-00 | 2500-01 | 2501-02 | 2502-03 | 2503-04 | 2504-05 | 2505-06 | 2506-07 | 2507-08 | 2508-09 | 2509-10 | 2510-11 | 2511-12 | 2512-13 | 2513-14 | 2514-15 | 2515-16 | 2516-17 | 2517-18 | 2518-19 | 2519-20 | 2520-21 | 2521-22 | 2522-23 | 2523-24 | 2524-25 | 2525-26 | 2526-27 | 2527-28 | 2528-29 | 2529-30 | 2530-31 | 2531-32 | 2532-33 | 2533-34 | 2534-35 | 2535-36 | 2536-37 | 2537-38 | 2538-39 | 2539-40 | 2540-41 | 2541-42 | 2542-43 | 2543-44 | 2544-45 | 2545-46 | 2546-47 | 2547-48 | 2548-49 | 2549-50 | 2550-51 | 2551-52 | 2552-53 | 2553-54 | 2554-55 | 2555-56 | 2556-57 | 2557-58 | 2558-59 | 2559-60 | 2560-61 | 2561-62 | 2562-63 | 2563-64 | 2564-65 | 2565-66 | 2566-67 | 2567-68 | 2568-69 | 2569-70 | 2570-71 | 2571-72 | 2572-73 | 2573-74 | 2574-75 | 2575-76 | 2576-77 | 2577-78 | 2578-79 | 2579-80 | 2580-81 | 2581-82 | 2582-83 | 2583-84 | 2584-85 | 2585-86 | 2586-87 | 2587-88 | 2588-89 | 2589-90 | 2590-91 | 2591-92 | 2592-93 | 2593-94 | 2594-95 | 2595-96 | 2596-97 | 2597-98 | 2598-99 | 2599-00 | 2600-01 | 2601-02 | 2602-03 | 2603-04 | 2604-05 | 2605-06 | 2606-07 | 2607-08 | 2608-09 | 2609-10 | 2610-11 | 2611-12 | 2612-13 | 2613-14 | 2614-15 | 2615-16 | 2616-17 | 2617-18 | 2618-19 | 2619-20 | 2620-21 | 2621-22 | 2622-23 | 2623-24 | 2624-25 | 2625-26 | 2626-27 | 2627-28 | 2628-29 | 2629-30 | 2630-31 | 2631-32 | 2632-33 | 2633-34 | 2634-35 | 2635-36 | 2636-37 | 2637-38 | 2638-39 | 2639-40 | 2640-41 | 2641-42 | 2642-43 | 2643-44 | 2644-45 | 2645-46 | 2646-47 | 2647-48 | 2648-49 | 2649-50 | 2650-51 | 2651-52 | 2652-53 | 2653-54 | 2654-55 | 2655-56 | 2656-57 | 2657-58 | 2658-59 | 2659-60 | 2660-61 | 2661-62 | 2662-63 | 2663-64 | 2664-65 | 2665-66 | 2666-67 | 2667-68 | 2668-69 | 2669-70 | 2670-71 | 2671-72 | 2672-73 | 2673-74 | 2674-75 | 2675-76 | 2676-77 | 2677-78 | 2678-79 | 2679-80 | 2680-81 | 2681-82 | 2682-83 | 2683-84 | 2684-85 | 2685-86 | 2686-87 | 2687-88 | 2688-89 | 2689-90 | 2690-91 | 2691-92 | 2692-93 | 2693-94 | 2694-95 | 2695-96 | 2696-97 | 2697-98 | 2698-99 | 2699-00 | 2700-01 | 2701-02 | 2702-03 | 2703-04 | 2704-05 | 2705-06 | 2706-07 | 2707-08 | 2708-09 | 2709-10 | 2710-11 | 2711-12 | 2712-13 | 2713-14 | 2714-15 | 2715-16 | 2716-17 | 2717-18 | 2718-19 | 2719-20 | 2720-21 | 2721-22 | 2722-23 | 2723-24 | 2724-25 | 2725-26 | 2726-27 | 2727-28 | 2728-29 | 2729-30 | 2730-31 | 2731-32 | 2732-33 | 2733-34 | 2734-35 | 2735-36 | 2736-37 | 2737-38 | 2738-39 | 2739-40 | 2740-41 | 2741-42 | 2742-43 | 2743-44 | 2744-45 | 2745-46 | 2746-47 | 2747-48 | 2748-49 | 2749-50 | 2750-51 | 2751-52 | 2752-53 | 2753-54 | 2754-55 | 2755-56 | 2756-57 | 2757-58 | 2758-59 | 2759-60 | 2760-61 | 2761-62 | 2762-63 | 2763-64 | 2764-65 | 2765-66 | 2766-67 | 2767-68 | 2768-69 | 2769-70 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| 2870-71 | 2871-72 | 2872-73 | 2873-74 | 2874-75 | 2875-76 | 2876-77 | 2877-78 | 2878-79 | 2879-80 | 2880-81 | 2881-82 | 2882-83 | 2883-84 | 2884-85 | 2885-86 | 2886-87 | 2887-88 | 2888-89 | 2889-90 | 2890-91 | 2891-92 | 2892-93 | 2893-94 | 2894-95 | 2895-96 | 2896-97 | 2897-98 | 2898-99 | 2899-00 | 2900-01 | 2901-02 | 2902-03 | 2903-04 | 2904-05 | 2905-06 | 2906-07 | 2907-08 | 2908-09 | 2909-10 | 2910-11 | 2911-12 | 2912-13 | 2913-14 | 2914-15 | 2915-16 | 2916-17 | 2917-18 | 2918-19 | 2919-20 | 2920-21 | 2921-22 | 2922-23 | 2923-24 | 2924-25 | 2925-26 | 2926-27 | 2927-28 | 2928-29 | 2929-30 | 2930-31 | 2931-32 | 2932-33 | 2933-34 | 2934-35 | 2935-36 | 2936-37 | 2937-38 | 2938-39 | 2939-40 | 2940-41 | 2941-42 | 2942-43 | 2943-44 | 2944-45 | 2945-46 | 2946-47 | 2947-48 | 2948-49 | 2949-50 | 2950-51 | 2951-52 | 2952-53 | 2953-54 | 2954-55 | 2955-56 | 2956-57 | 2957-58 | 2958-59 | 2959-60 | 2960-61 | 2961-62 | 2962-63 | 2963-64 | 2964-65 | 2965-66 | 2966-67 | 2967-68 | 2968-69 | 2969-70 | 2970-71 | 2971-72 | 2972-73 | 2973-74 | 2974-75 | 2975-76 | 2976-77 | 2977-78 | 2978-79 | 2979-80 | 2980-81 | 2981-82 | 2982-83 | 2983-84 | 2984-85 | 2985-86 | 2986-87 | 2987-88 | 2988-89 | 2989-90 | 2990-91 | 2991-92 | 2992-93 | 2993-94 | 2994-95 | 2995-96 | 2996-97 | 2997-98 | 2998-99 | 2999-00 | 3000-01 | 3001-0 |
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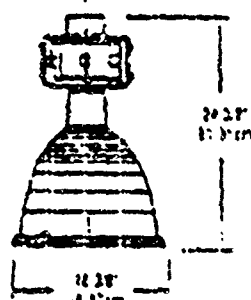
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ORDERING SEQUENCE

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| E 1.5W | 195 |

4459: IC 01.73

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For complete description & application
information see Census & Administration
Series 1-B-4

Spliced Intron in Figure

- ☐ SF Single Fuse (120/277V) max 75
- ☐ SF Double Fuse (120/240/480V) max 75
- ☐ EC Emergency Circuit (lamp not included)
- ☐ ORS1 Alarm Restore System (lamp not included)
- ☐ ORS2S1 ORS Two Signal (lamp not included)
- ☐ MA 55°C Ambient Connector
- ☐ CR Corrosion Resistant Term (copper)
- ☐ CR7 Corrosion Resistant Plug (steel)
- ☐ FET Triple Contact Connector
- ☐ TOR Three-Wire Connector
- ☐ TORP Three-Wire Plug for Plug
- ☐ PMP Permat-Bus Plug
- ☐ LCPM 120V Cord & Plug for T&E & PM
- ☐ LCPM110 120V 3 Cord & 15A NEMA Type Lock Plug
- ☐ LCPM115 120V 3 Cord & 15A 15NEMA Type Lock Plug
- ☐ LRCA1 120V 3 Cord & Panel RCA Connector
- ☐ LRCA2 120V 3 Cord & Panel RCA Connector
- ☐ LUCP 120V w/Double Fuse (120V) 15A
- ☐ LUCP3M 120V w/Double Fuse (120V) 15A
- ☐ LUCP3F 120V w/Double Fuse (120V) 15A
- ☐ UCP 120V w/Double Fuse (120V) 15A
- ☐ UCP3M 120V w/Double Fuse (120V) 15A
- ☐ UCP3F 120V w/Double Fuse (120V) 15A
- ☐ TR Remote Control
- ☐ TRCP110 TR w/Double Fuse (120V) 15A
- ☐ WL Wire Location Label
- ☐ CTS1 Corrugated Sheet Temporary Cass. Lens
- ☐ SSS Stainless Steel Sheet
- ☐ SLR Stainless Steel Lens Ring
- ☐ LP Lens Plug
- ☐ EP Epoxy Resin
- ☐ MRB Magnetic Resonance Imaging
- ☐ CWA Corrugated Wire

Secret

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| 00 | NAME | 1 1/2 hr. 100 - 100 |
| 01 | NAME | 2 1/2 hr. 100 - 100 |
| 02 | NAME | 3 1/2 hr. 100 - 100 |
| 03 | NAME | 4 1/2 hr. 100 - 100 |
| 04 | NAME | 5 1/2 hr. 100 - 100 |
| 05 | NAME | 6 1/2 hr. 100 - 100 |
| 06 | NAME | 7 1/2 hr. 100 - 100 |
| 07 | NAME | 8 1/2 hr. 100 - 100 |
| 08 | NAME | 9 1/2 hr. 100 - 100 |
| 09 | NAME | 10 1/2 hr. 100 - 100 |
| 10 | NAME | 11 1/2 hr. 100 - 100 |
| 11 | NAME | 12 1/2 hr. 100 - 100 |
| 12 | NAME | 13 1/2 hr. 100 - 100 |
| 13 | NAME | 14 1/2 hr. 100 - 100 |
| 14 | NAME | 15 1/2 hr. 100 - 100 |
| 15 | NAME | 16 1/2 hr. 100 - 100 |
| 16 | NAME | 17 1/2 hr. 100 - 100 |
| 17 | NAME | 18 1/2 hr. 100 - 100 |
| 18 | NAME | 19 1/2 hr. 100 - 100 |
| 19 | NAME | 20 1/2 hr. 100 - 100 |
| 20 | NAME | 21 1/2 hr. 100 - 100 |
| 21 | NAME | 22 1/2 hr. 100 - 100 |
| 22 | NAME | 23 1/2 hr. 100 - 100 |
| 23 | NAME | 24 1/2 hr. 100 - 100 |
| 24 | NAME | 25 1/2 hr. 100 - 100 |
| 25 | NAME | 26 1/2 hr. 100 - 100 |
| 26 | NAME | 27 1/2 hr. 100 - 100 |
| 27 | NAME | 28 1/2 hr. 100 - 100 |
| 28 | NAME | 29 1/2 hr. 100 - 100 |
| 29 | NAME | 30 1/2 hr. 100 - 100 |
| 30 | NAME | 31 1/2 hr. 100 - 100 |
| 31 | NAME | 32 1/2 hr. 100 - 100 |
| 32 | NAME | 33 1/2 hr. 100 - 100 |
| 33 | NAME | 34 1/2 hr. 100 - 100 |
| 34 | NAME | 35 1/2 hr. 100 - 100 |
| 35 | NAME | 36 1/2 hr. 100 - 100 |
| 36 | NAME | 37 1/2 hr. 100 - 100 |
| 37 | NAME | 38 1/2 hr. 100 - 100 |
| 38 | NAME | 39 1/2 hr. 100 - 100 |
| 39 | NAME | 40 1/2 hr. 100 - 100 |
| 40 | NAME | 41 1/2 hr. 100 - 100 |
| 41 | NAME | 42 1/2 hr. 100 - 100 |
| 42 | NAME | 43 1/2 hr. 100 - 100 |
| 43 | NAME | 44 1/2 hr. 100 - 100 |
| 44 | NAME | 45 1/2 hr. 100 - 100 |
| 45 | NAME | 46 1/2 hr. 100 - 100 |
| 46 | NAME | 47 1/2 hr. 100 - 100 |
| 47 | NAME | 48 1/2 hr. 100 - 100 |
| 48 | NAME | 49 1/2 hr. 100 - 100 |
| 49 | NAME | 50 1/2 hr. 100 - 100 |
| 50 | NAME | 51 1/2 hr. 100 - 100 |
| 51 | NAME | 52 1/2 hr. 100 - 100 |
| 52 | NAME | 53 1/2 hr. 100 - 100 |
| 53 | NAME | 54 1/2 hr. 100 - 100 |
| 54 | NAME | 55 1/2 hr. 100 - 100 |
| 55 | NAME | 56 1/2 hr. 100 - 100 |
| 56 | NAME | 57 1/2 hr. 100 - 100 |
| 57 | NAME | 58 1/2 hr. 100 - 100 |
| 58 | NAME | 59 1/2 hr. 100 - 100 |
| 59 | NAME | 60 1/2 hr. 100 - 100 |
| 60 | NAME | 61 1/2 hr. 100 - 100 |
| 61 | NAME | 62 1/2 hr. 100 - 100 |
| 62 | NAME | 63 1/2 hr. 100 - 100 |
| 63 | NAME | 64 1/2 hr. 100 - 100 |
| 64 | NAME | 65 1/2 hr. 100 - 100 |
| 65 | NAME | 66 1/2 hr. 100 - 100 |
| 66 | NAME | 67 1/2 hr. 100 - 100 |
| 67 | NAME | 68 1/2 hr. 100 - 100 |
| 68 | NAME | 69 1/2 hr. 100 - 100 |
| 69 | NAME | 70 1/2 hr. 100 - 100 |
| 70 | NAME | 71 1/2 hr. 100 - 100 |
| 71 | NAME | 72 1/2 hr. 100 - 100 |
| 72 | NAME | 73 1/2 hr. 100 - 100 |
| 73 | NAME | 74 1/2 hr. 100 - 100 |
| 74 | NAME | 75 1/2 hr. 100 - 100 |
| 75 | NAME | 76 1/2 hr. 100 - 100 |
| 76 | NAME | 77 1/2 hr. 100 - 100 |
| 77 | NAME | 78 1/2 hr. 100 - 100 |
| 78 | NAME | 79 1/2 hr. 100 - 100 |
| 79 | NAME | 80 1/2 hr. 100 - 100 |
| 80 | NAME | 81 1/2 hr. 100 - 100 |
| 81 | NAME | 82 1/2 hr. 100 - 100 |
| 82 | NAME | 83 1/2 hr. 100 - 100 |
| 83 | NAME | 84 1/2 hr. 100 - 100 |
| 84 | NAME | 85 1/2 hr. 100 - 100 |
| 85 | NAME | 86 1/2 hr. 100 - 100 |
| 86 | NAME | 87 1/2 hr. 100 - 100 |
| 87 | NAME | 88 1/2 hr. 100 - 100 |
| 88 | NAME | 89 1/2 hr. 100 - 100 |
| 89 | NAME | 90 1/2 hr. 100 - 100 |
| 90 | NAME | 91 1/2 hr. 100 - 100 |
| | | |

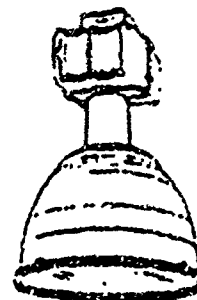
ACCESSOR 13 12 1010 10510 - 001
INSTR 13 1010 10510 1100 1100

| | |
|-------|------------|
| DM 80 | 2000-01-01 |
| DM 81 | 2000-01-01 |
| DM 82 | 2000-01-01 |
| DM 83 | 2000-01-01 |
| DM 84 | 2000-01-01 |

Figure 1a:

TE

**HIGH PRESSURE SODIUM
150W ENCLOSED
12' to 20' Mounting**



SPECIFICATIONS

HOUSING - Rugged, lightweight, die-cast aluminum with dark bronze polyester powder finish. Electrical components are mounted vertically and heat-sinked to prevent overheating for cooler operation.

BALLAST - high reactance high power factor.
180°C class M insulation system

OPTICS - One piece totally enclosed and gasketed 616 Tek II spot aluminum anodized reflector combines high efficiency with extended shelving angle for high performance control exclusive flange design mounting are tube voltage rise. Gasketed clear tempered glass lens inhibits the entrance of ambient contaminants.

INSTALLATION - Program 1: for 20" diameter
for 3-4' circular (standard). Complete one of
mounting 20" for 20" and 20" for 20" and 20"

LISTING - UL 572 listed for damp location
0°C - 30°C to 15°C ambient operation UL and
UL approved listing available

SOCKET - Porcelain vertically oriented metal
base socket with socket body nickel plated
silver steel and ceramic contact. UL listed
1500W - 250V



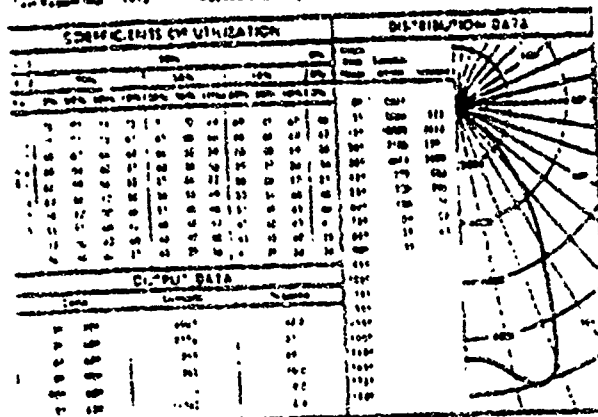
PAGE 3-27793
TESS

PHOTOMETRIC DATA

The charts below provide the most useful data from specific photometric tests of the specific light sources and distribution patterns shown. For results of any combination shown or other requirements, contact your HI-TEK LITHONIA representative.

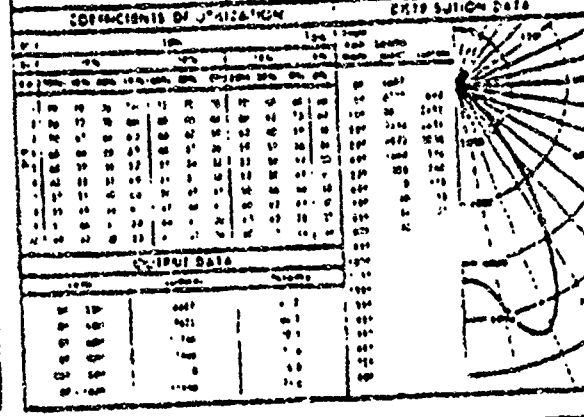
TE 1505 E17C

150W 120 volt High Pressure Sodium Lamp rated to 1000 lumens
See Table No. 1505C



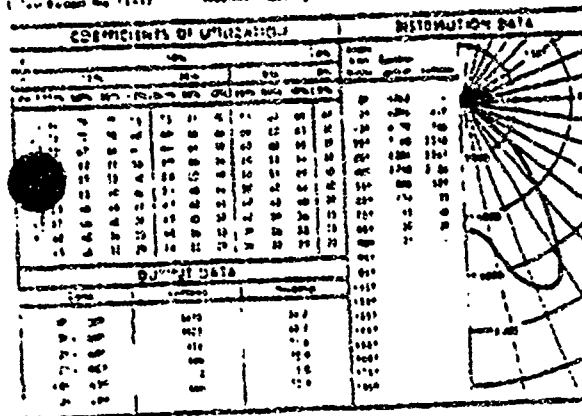
TE 1505 E17M

150W 120 volt High Pressure Sodium Lamp rated to 1000 lumens
See Table No. 1505M



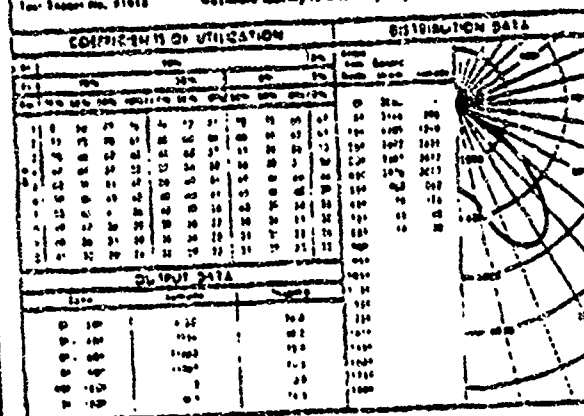
TE 1505 E17S

150W 120 volt High Pressure Sodium Lamp rated to 1000 lumens
See Table No. 1505S



TE 1505 E17W

150W 120 volt High Pressure Sodium Lamp rated to 1000 lumens
See Table No. 1505W



ELECTRICAL CHARACTERISTICS

| Wattage | Wattage | Wattage | Wattage | Wattage | Wattage |
|---------|---------|---------|---------|---------|---------|
| 100W | 150W | 200W | 250W | 300W | 350W |
| 100 | 150 | 200 | 250 | 300 | 350 |
| 100 | 150 | 200 | 250 | 300 | 350 |
| 100 | 150 | 200 | 250 | 300 | 350 |
| 100 | 150 | 200 | 250 | 300 | 350 |

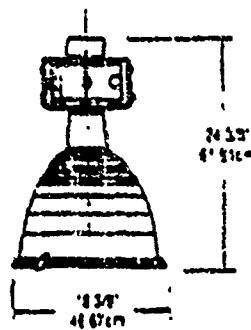
Based on typical 100 watt lamp. Actual wattage may vary. Always use proper wiring and fuses. Do not use more than 100 watts per footcandle. Do not use more than 100 watts per footcandle. Do not use more than 100 watts per footcandle.

High-Ray Industrial Lighting

ORDERING SEQUENCE

| CATALOG NUMBER | VOLTAGE | OPTIONS (Factory Installed) |
|----------------|---------|---|
| TE 200S E17N | 120 | Shipped installed in Fixture |
| TE 200S E17C | 200 | SF Single Fuse (120 277V) w/ TB |
| TE 200S E17M | 240 | OF Double Fuse (200 240 480V) w/ TB |
| TE 200S E17S | 277 | EC Emergency Circuit (lamp not included) |
| TE 200S E17W | 480 | GRS Guard Restrain System (lamp not included) |
| | 70 | GRSTD GRS Time Delay (lamp not included) |

1. Narrow
 2. Concentrating
 3. Medium
 4. Spread
 5. Indirect



| DIST. | MMH |
|-------|------|
| E17N | 1.79 |
| E17C | 1.17 |
| E17M | 1.37 |
| E17S | 1.54 |
| E17W | 1.53 |

Weight: 22.05 P.O.L.G.

NOTES:

- May also be ordered with 5', 10', 15' cord lengths
- Multi-Tap Ballast (120 200 240 277V)
- Guard lamp wattage not to exceed ballast wattage rating
- May be ordered as accessory ALST see Industrial Accessories Sheet for ordering information
- 35' cable to connect fixture to remote control
- 35' ambistandard 480V
- May change a situation Consult factory
- Available with WLS option

OPTIONS (Factory Installed)

- SF Single Fuse (120 277V) w/ TB
- OF Double Fuse (200 240 480V) w/ TB
- EC Emergency Circuit (lamp not included)
- GRS Guard Restrain System (lamp not included)
- GRSTD GRS Time Delay (lamp not included)
- HA 65°C Ambient Operation
- CA Corrosion Resistant Finish (polyester)
- CRT Corrosion Resistant Finish (zinc)
- TEF Teflon Finish Reflector
- TWP Teflon Wire Outer Box
- TWPB Teflon Wire Outer Box Plug-in
- PPM Pendant Box Plug-in
- LCPM Loop Cord & Plug for 2PM & PPM
- LCPM** Loop 3' Cord & 15A RETA-Tap Lock Plug
- MCJPM** Loop 3' Cord & 15A RETA-Tap w/ Lock Plug
- LRCS** Loop 3' Cord & Remote RCA Connector
- MRCA** Loop 3' Cord & Remote RCA Connector
- LUCP Loop Cord and Plug for LPM
- LUCPSP LUCP w/ Single Fuse (120V) w/ TB
- LUCPOP LUCP w/ Double Fuse (200V) w/ TB
- UCP Universal Cord & Plug for LPM
- UCPSP UCP w/ Single Fuse (120V) w/ TB
- UCPOP UCP w/ Double Fuse (200V) w/ TB
- TR Remote Ballast
- TRCPS** TR w/ 3-Wire Cord
- WZ Wet Location J. Label
- C73T Corning C73 Pattern Tempered Glass Lens
- SSS Stainless Steel Screws
- SLR Stainless Steel Lens Rings
- UP UPL Opt
- CF Corrosion Filter

Shipped Separately

- NMP Fixture Mount - Made
- NMGP Grommeted Fixture Mount - Made
- LMP Fixture Mount - Made
- LPMP Grommeted Fixture Mount - Made
- TWP Teflon Wire Outer Box
- PPM Pendant Power Plug
- UPM Universal Power Mount
- UPM** UPM w/ Single Adapter Plug
- UPM** UPM w/ Double Adapter Plug
- UPM** UPM w/ Double Adapter Plug & Ambient Plug
- WG Wire Guard Aluminum Protector
- LG Lower Guard
- OCY Cylinder Shade
- OSO Square Shade
- BHX Hexagonal Shade

ACCESSORIES (Field Installed)

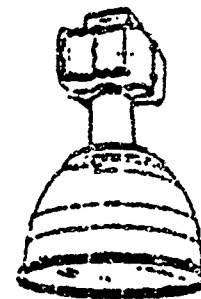
(Refer to appropriate line item)

| Cat No | Description |
|--------|----------------------|
| NMP | Fixture Mount - Made |
| LMP | Fixture Mount - Made |

Picture Type

TE

HIGH PRESSURE SODIUM
200W ENCLOSED
15' to 20' Mounting



SPECIFICATIONS

HOUSING - Rugged, lightweight, die-cast aluminum with dark bronze polyester finish. Electrical components are spaced horizontally and heat-sunk to ballast housing for cooler operation.

BALLAST - High power factor. Constant wattage autotransformer. 180° class K ballast system.

OPTICS - One-piece totally enclosed or gasketed Arc-Tex Vapour aluminum, or reflector combines high efficiency with tapered shearing angle for high optical control. Exclusive fluting design minimizes and reduces vibration. Gasket clear tempered glass lens inhibits the entrance of ambient contaminants.

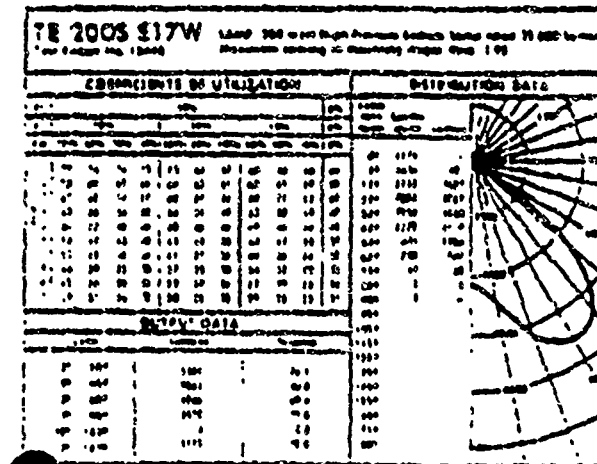
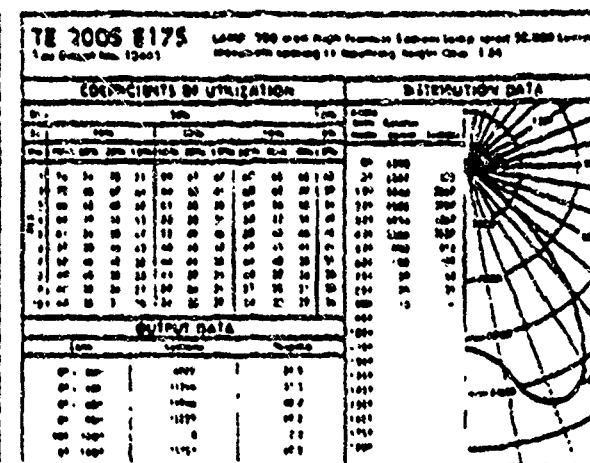
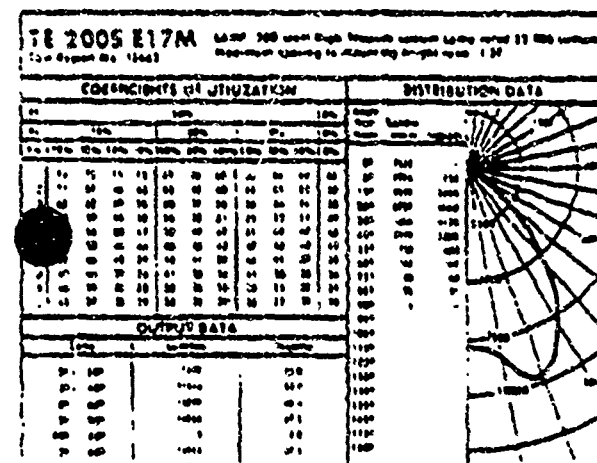
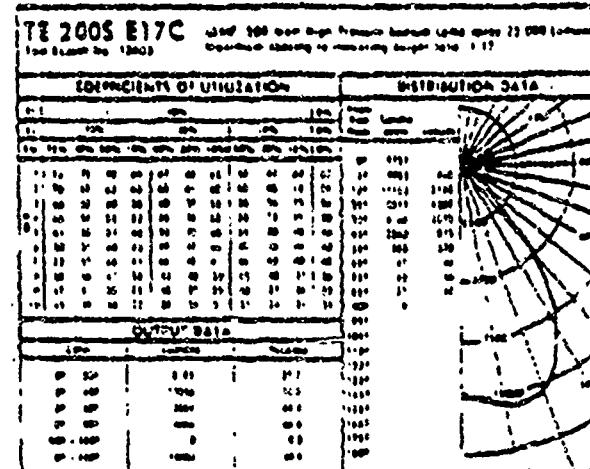
INSTALLATION - Pendant splice box for 3/4" conduit (standard). Complete mounting options and accessories are available.

LISTING - UL 1572 listed for damp loc and -30°C to 55°C ambient operation. location label option available.

SOCKET - Porcelain, vertically oriented base socket with copper alloy metal screw shell and center contact UL list 1500W-600V

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HI-TEK
 INDUSTRIAL OUTDOOR LUM
 A DIVISION OF LITHONIA, INC.

The charts below provide the most useful data from specific instrument tests of the specific light sources and distribution patterns shown for each. The results of any combination system, or other recommendations, contact your MELTEC UTHONIA representative.



ELECTRICAL CHARACTERISTICS

| Operating Conditions | Resistance
25°C (77°F) | Resistance
100°C (212°F) | Current
at 100V | Power
at 100V | Resistance
at 100°C (212°F) |
|----------------------|---------------------------|-----------------------------|--------------------|------------------|--------------------------------|
| 100 ohm nominal | 100 | 100 | 1.00 | 0.10 | 100 |
| 200 ohm nominal | 200 | 200 | 0.50 | 0.05 | 200 |
| 377 ohm nominal | 377 | 377 | 0.26 | 0.026 | 377 |
| 600 ohm nominal | 600 | 600 | 0.17 | 0.017 | 600 |

1. The above is a true and correct copy of the original document as it appears in the files of the Department of the Interior, Bureau of Indian Affairs, at Washington, D. C., and is not a copy of a copy.

High-Bay Industrial Lighting

ORDERING SEQUENCE

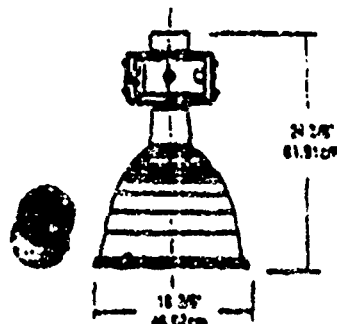
| CATALOG NUMBER | VOLTAGE | OPTIONS (Factory Installed) |
|----------------|---------|-----------------------------|
| | | |

- ☒ TE 250 S E17H
- ☐ TE 250 S E17C
- ☐ TE 250 S E17M
- ☐ TE 250 S E17S
- ☐ TE 250 S E17W

- ☐ 120
- ☐ 208
- ☐ 240
- ☐ 277
- ☐ 480
- ☐ 720

- Shipped Installed in Fixture
- ☐ SF Single Fuse (120-277V) vs TB
 - ☐ DF Double Fuse (208-240-480V) vs TB
 - ☐ EC Emergency Circuit (lamps not included)
 - ☐ QRS[®] Quartz Resonance System (lamps not included)
 - ☐ QRS[®] QRS Time Delay (lamps not included)
 - ☐ MA 65°C Ambient Operation
 - ☐ CR Corrosion Resistant Finish (polycarbonate)
 - ☐ CR Corrosion Resistant Finish (aluminum)
 - ☐ TEF Teflon Finished Reflector
 - ☐ TDB Thru-Wire Outlet Box
 - ☐ TDBP Thru-Wire Outlet Box Plug-in
 - ☐ PBP Pendant Box Plug-in
 - ☐ LCPM Loop Cord & Plug for TPM & PPM
 - ☐ LCPM^{***} Loop 3' Cord & 15A NEMA Tumbler Lock Plug
 - ☐ MCSM^{***} Loop 3' Cord & 15A NEMA Tumbler Lock Plug
 - ☐ LRCM^{***} Loop 3' Cord & 3-Pole RCA Connector
 - ☐ MRCM^{***} Loop 3' Cord & 3-Pole RCA Connector
 - ☐ LUCP Loop Cord and Plug for UPM1
 - ☐ LUCPSP Loop Cord Single Fuse (dead front) vs TB
 - ☐ LUCPDP Loop Cord Double Fuse (dead front) vs TB
 - ☐ UCP Universal Cable & Plug for UPM
 - ☐ UCPSP UCP w/Single Fuse (dead front)
 - ☐ UCPDP UCP w/Double Fuse (dead front)
 - ☐ TR Remote Ballast
 - ☐ TRCP^{***} TR w/Thru-Wire Cable
 - ☐ WL Wet Location UL Listed
 - ☐ CT31[®] Corning CT3 Pattern Tempered Glass Lens
 - ☐ SSX Stainless Steel Screws
 - ☐ SLR Stainless Steel Lens Rings
 - ☐ UP Light
 - ☐ CP Charcoal Filter
 - ☐ MRB Magnetic Regulator Ballast

N = Narrow
C = Concentrating
M = Medium
S = Spread
W = Widespread



| DISTR. | LS/MM |
|--------|-------|
| E17H | .75 |
| E17C | 1.17 |
| E17M | 1.37 |
| E17S | 1.34 |
| E17W | 1.93 |

Weight 25 lbs./10 kg.

NOTES:

- * May also be ordered with 5', 10', 15' cord lengths.
- * Mounting Bracket (120-208-240-277V)
- * Quartz lamp wattage not to exceed ballast wattage rating.
- * May be ordered as accessory. MUST see Industrial Accessories Sheet for ordering and installation.
- * 1/2" cable to connect optical to remote ballast.
- * 20 amp 240 volt 480V
- * May change distribution.
- * Consult factory.
- * Not available WL option.

For Complete Description & Application

Shipped Separately *

- ☐ HEMP Fixture Mount - Male
- ☐ HEMF[®] Grounded Fixture Mount - Male
- ☐ LPM[®] Fixture Loop - Male
- ☐ LPM[®] Grounded Fixture Loop - Male
- ☐ TPM Thru-Wire Power Mount
- ☐ PPM Pendant Power Mount
- ☐ UPM Universal Power Module
- ☐ UPM1[®] UPM without Adapter Plate
- ☐ UPM2[®] UPM with Adapter Plate
- ☐ UPM3[®] UPM without Adapter Plate & Wiring Block
- ☐ MS Wire Guard/Aluminum Reflector
- ☐ LQ Louver Shield
- ☐ DCT Cylinder Shade
- ☐ BSO Square Shade
- ☐ BHZ Hexagonal Shade

ACCESSORIES (Field Installed)

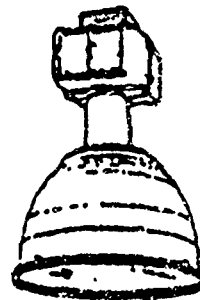
(order as separate line item)

| Cat. No. | Description |
|----------|------------------------|
| HEP | Fixture Mount - Female |
| LPM | Fixture Loop - Female |
| UPP | Upward Chain Kit |

Fixture Type

TE

HIGH PRESSURE SODIUM
250W ENCLOSED
18' to 25' Mounting



SPECIFICATIONS

HOUSING - Rugged, lightweight, die-cast aluminum with dark bronze polyester powder finish. Electrical components are opposed horizontally and heat-sunked to ballast housing for cooler operation.

BALLAST - High power factor. Constant wattage autotransformer. 180° class N insulation system.

OPTICS - One piece totally enclosed and gasketed Arc Tek II spun aluminum, anodized reflector combines high efficiency with extended shielding angle for high performance optical centers. Exclusive fluting design minimizes arc tube voltage rise. Gasketed clear tempered glass lens minimizes the entrance of ambient contaminants.

INSTALLATION - Pendant splice box (three for 3/4" conduit (standard). Complete line of mounting options and accessories available.

LISTING - UL 1572 listed for damp locations and -30°C to 55°C ambient operation. UL v location label option available.

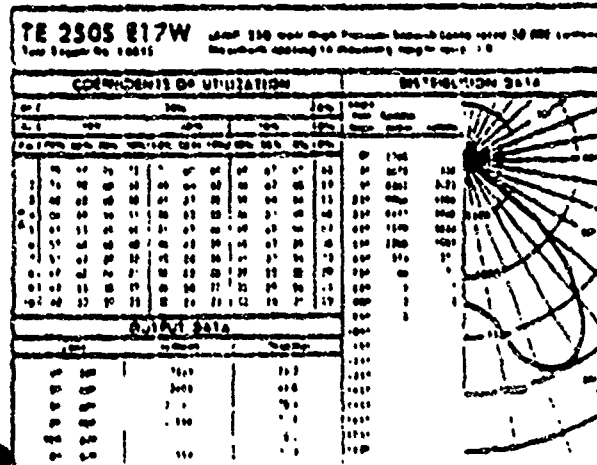
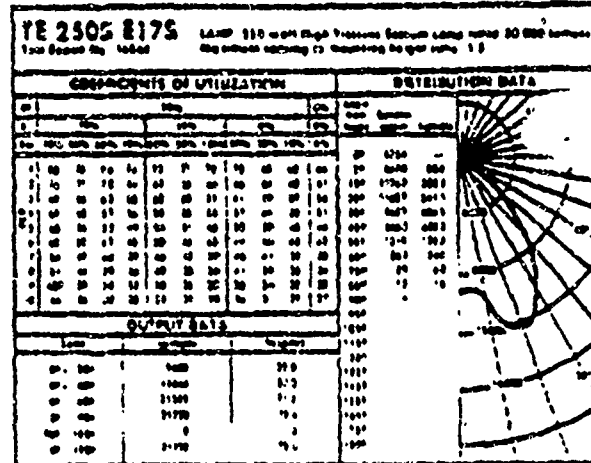
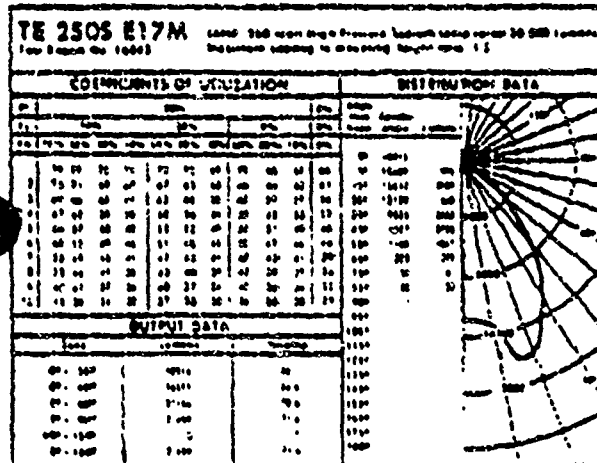
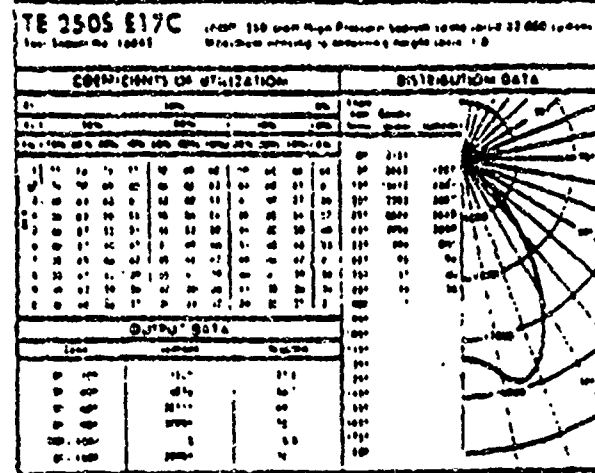
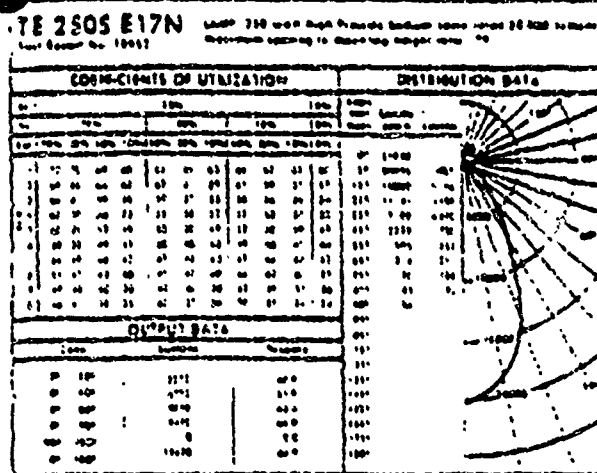
ROCKET - Porcelain vertically oriented no base socket with copper alloy nickel plated screw shell and center contact. UL listed 1500W-500V

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PAGE 3-2812

PHOTOMETRIC DATA

The charts below provide the most useful data from specific photometric tests of the spot light sources and distribution patterns shown. For complete results of any combination shown or other requirements, contact your HI-TEK LITHONIA representative.



ELECTRICAL CHARACTERISTICS

| Output (lm) | Input (W) | Efficiency (%) | Power Factor | THD (%) | Temp. Rise (°C) | Life (hrs) |
|-------------|-----------|----------------|--------------|---------|-----------------|------------|
| 100 | 100 | 87 | 0.95 | 15 | 10 | 10,000 |
| 200 | 200 | 87 | 0.95 | 15 | 10 | 10,000 |
| 300 | 300 | 87 | 0.95 | 15 | 10 | 10,000 |
| 400 | 400 | 87 | 0.95 | 15 | 10 | 10,000 |

* Based on output of 100 lm and input of 100 W. Efficiency is based on input power. Power factor is based on input power. THD is based on input power. Temp. rise is based on input power. Life is based on input power.

ORDERING SEQUENCE

3 TE 4808 E22M
 0 TE 4808 E22C
 0 TE 4808 E17M
 6 TE 4808 E17S
 5 TE 4808 E17W

| | |
|----------|-----|
| 11010011 | 120 |
| 200 | 200 |
| 240 | 240 |
| 277 | 277 |
| 400 | 400 |
| 700 | 700 |

- SF Single Fuse (120-277V) w/ TB
- DF Double Fuse (208-240-480V) w/ TB
- EC Emergency Circuit (alarm not included)
- GAS Gas Resinage System (lamp not included)
- GSTD Gas Start Delay (lamp not included)
- HA 65°C Ambient Operation
- CR Corrosion Resistant Finish (polyester)
- CRT Corrosion Resistant Finish (aluminum)
- TEF Teflon Finish/Reflector
- TOW Thru-Wire Outlet Box
- TOWP Thru-Wire Outlet Box Plug-in
- PWP Permanent Box Plug-in
- LCPM Loop Cord & Plug for TWM & PPM
- LCPM11 Loop, 3' Cord & 15A NEMA Twist-Lock Plug
- LCPM111 Loop, 3' Cord & 15A NEMA Twist-Lock Plug
- LRCM11 Loop, 3' Cord & Remote RCA Connector
- LRCM111 Loop, 3' Cord & Remote RCA Connector
- LUCM Loop Cord and Plug for UPM1
- LUCPM LUCP w/Single Fuse (1000 watt) w/ TB
- LUCPDM LUCP w/Double Fuse (2000 watt) w/ TB
- UCP Universal Cable & Plug for UPM
- UCSPM UCP w/Single Fuse (1000 watt)
- UCPCPM UCP w/Double Fuse (2000 watt)
- TR Remote Ballast
- TRCPM TR w/Pre-Wired Cable
- WL Wet Location UL Label
- G73T Coating C73 Pattern Tempered Glass Lens
- SSS Stainless Steel Screws
- SLR Stainless Steel Lens Rings
- UP UP Light
- CF Charcoal Filter
- MRB Magnetic Regulator Ballast

| DISTR. | SNMM |
|--------|------|
| E22N | 0.5 |
| E22C | 1.1 |
| E17M | 1.25 |
| E17S | 1.5 |
| E17W | 1.0 |

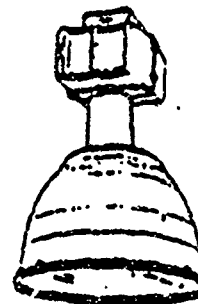
ADRES:

- For Complete Description & Application
Instructions, See Chapter 3, Appendices
BAGG11-21A

| Est. No. | Description |
|----------|------------------------|
| NRB | Private Motel - 1 room |
| LPP | Private Motel - 1 room |
| BCR | Hotel - 1 room |
| TMB | Travel Agency - 1 room |

TE

**HIGH PRESSURE SODIUM
400W ENCLOSED
20' to 30' Mounting**



HOUSING - Rugged, lightweight, die-cast aluminum with cast bronze polyester powder finish. Electrical components are opposed horizontally and heat-sinked to dissipate housing for cooler operation.

BALLAST - High power factor Constant
voltage autotransformer, 180° class H
induction system.

OPTICS - One piece totally enclosed and gasketed Arc Tek II open aluminum, and 21 reflector combines high efficiency with extended shielding angle for high performance optical control. Exclusive fitting design minimizes arc tube voltage rise. Gasketed heat tempered glass lens minimizes the entrance of ambient contaminants.

INSTALLATION - Pencil marks for marking
for 3/4" center (standard) Corroplate line &
mounting holes and accessories available

LISTING - UL 572 based for camp location
and 32° to 55° altitude operation. UL is
location information available.

SOCKET - Porcelain, vertically oriented in-
base socket with copper alloy metal plated
screw shell and center contact. UL listed
150CW - 600V



The charts below provide the most useful data from each of the photographs of the traffic light scenes and distribution patterns shown for complete results of one combination shown or other measurements control your MATH, UNIFORMS, and organization.

[illegible]

| TE 4005 2175 | | SOLAP 4005 was High Frequency Radio used 20 000 hours | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|----------|---|----------|----------|-------|----------|---------|---------|-------|-------|-------|-------|--------|-------|-------|-------|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| Type Machine No 11054 | | Questioning spelling in shorthand began May 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COORDINATES OF UTILIZATION | | DETECTION DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table><tr><th colspan="2">Date</th><th colspan="2">Time</th><th colspan="2">Location</th><th colspan="2">Remarks</th></tr><tr><th>Day</th><th>Month</th><th>Hour</th><th>Minute</th><th>Lat</th><th>Long</th><th>Alt</th><th>Remarks</th></tr><tr><td>1</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>2</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>3</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>4</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>5</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>6</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>7</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>8</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>9</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>11</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>12</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>13</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>14</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>15</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>16</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>17</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>18</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>19</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>20</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>21</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>22</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>23</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>24</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>25</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>26</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>27</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>28</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>29</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr><tr><td>30</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td></tr></table> | | Date | | Time | | Location | | Remarks | | Day | Month | Hour | Minute | Lat | Long | Alt | Remarks | 1 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 2 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 3 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 4 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 12 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 13 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 14 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 15 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 16 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 17 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 18 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 19 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 20 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 21 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 22 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 23 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 24 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 25 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 26 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 27 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 28 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 29 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 30 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | |
| Date | | Time | | Location | | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Day | Month | Hour | Minute | Lat | Long | Alt | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 14 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 17 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 18 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 10:40 | 10:40 | 10:40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 15:00 | 15:00 | 15:00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15:10 | 15:10 | 15:10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15:20 | 15:20 | 15:20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15:30 | 15:30 | 15:30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| 15:50 | 15:50 | 15:50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16:00 | 16:00 | 16:00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16:10 | 16:10 | 16:10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16:20 | 16:20 | 16:20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16:30 | 16:30 | 16:30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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[illegible]

10000 to 100000 and 100000 to 1000000 are considered to be extremely low risk. These differences between categories are only slight and continuous. Therefore, and especially as the agency has based on the same hazard analysis and on the same 10000 to 1000000

NRG-300 Series

PERIMALUX



Hubbell Lighting's PERIMALUX Series is the ultimate in on wall type wall mount luminaires. It combines aesthetics and functional lighting in a compact, energy efficient luminaire designed for today's marketplace.

With an all polycarbonate housing and lens assembly, the Perimalux lighting fixture provides beauty and vandal resistance for safety and security lighting. Its unique optical design provides excellent uniform illumination at mounting heights of 6 - 12 feet with a spacing-to-mounting height ratio of 6 - 10 : 1 when utilizing a 50 or 70 watt high pressure sodium lamp, and a 4 - 10 : 1 ratio when using a 28 watt fluorescent lamp. This luminaire is the ideal energy efficient answer for both new construction or remodeling incandescent luminaires. For areas where an instant-on fixture is required for only short burning hours, the Perimalux luminaire is once again the answer with lamp wattages up to 80 watt incandescent.

The Perimalux series is available with your choice of either bronze polycarbonate or woodgrain finish. The woodgrain finish is a state-of-the-art process which allows the user a more decorative approach.

Additionally, Hubbell Lighting's Perimalux series provides the first of its kind fluorescent cold weather starting with the new 28 watt Quad lamp. This luminaire is ideal for areas requiring high lighting levels with an instant-on cool white fluorescent source.

Features:

Housing — One-piece, injection molded bronze polycarbonate. Permanent color with textured finish. Two point mounting prevents luminaire rotation.

Reflector — Internal reflector is vacuum metallized aluminum with a space protective coating which provides a minimum of 85% reflectivity and 80% specularly. Seventy-watt HPS model features a wide Lekroscope lens for low brightness and excellent uniformity.

Reflector — UV stabilized opaque polycarbonate provides low brightness and high spacing-to-mounting height ratios 6 - 10 : 1 for 50 and 70 watt HPS, 4 - 10 : 1 for 28 watt fluorescent. The unique design punches the light side-to-side while bending the light 13° below horizontal for reduced glare.

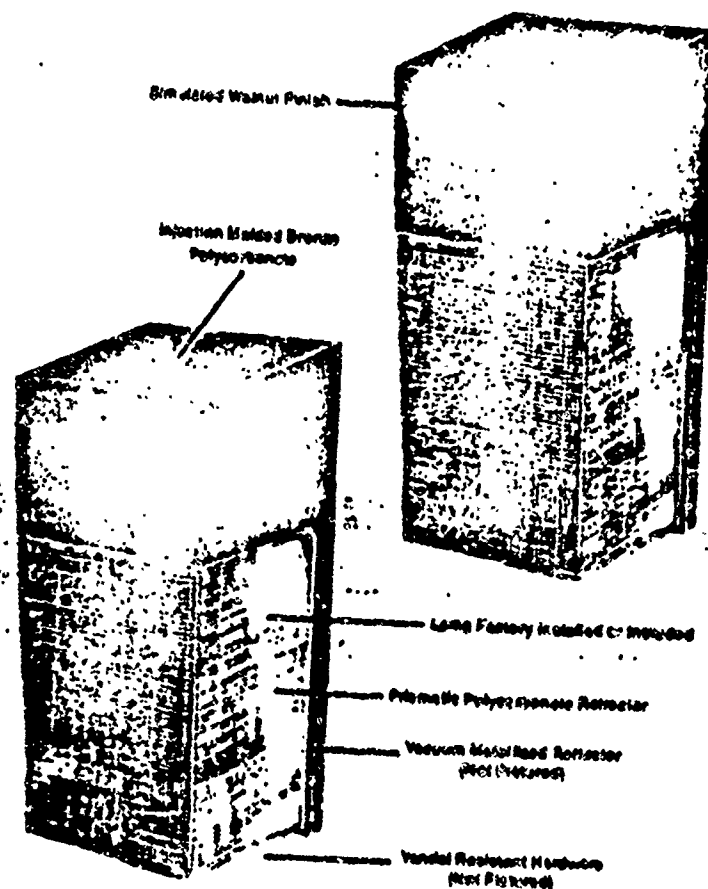
Lamp — HPS factory installed 8-17 clear medium base, etc. fluorescent included Quad luminaire.

Ballast — HPS Cans "M" form power factor reactor - 40°F starting 80 Hz. Quad fluorescent A-10-80 form power factor - 20°F to 30°F starting.

Vandal Resistant Set Screw — Retains reflector and protects lamp from vandalism.

Woodgrain Finish — Vandal grain finish available on selected unit. Simulated wood grain is mechanically bonded to the housing unit using the most current high technology processes.

Other Features — UL listed suitable for wet locations. Easy to install over standard four inch, 100W in junction box. Accessory surface conduit mounting box. Optional photocell, as weather permitting. Best for indoor or outdoor applications.



Ordering Information

| Catalog Number | Watt | Voltage | Power Type | Wt. | Volts |
|----------------------|------|---------|------------|-----|-------|
| HIGH PRESSURE SODIUM | | | | | |
| HPS-301 | 70 | 120 | Acad. HPS | 3 | 1.2 |
| HPS-302 | 50 | 120 | Acad. HPS | 3 | 1.2 |
| FLUORESCENT | | | | | |
| HPS-304 | 34 | 120 | Acad. HPS | 3 | 1.2 |
| INCANDESCENT | | | | | |
| HPS-305 | 50 | 120 | Acad. HPS | 3 | 1.2 |

Notes: 1. HPS-301, 302, 304, 305 are 12" long.
2. HPS-301, 302, 304, 305 are 12" long.

Options

The following options are available on the HPS-300 series. Order the fixture by adding suffix.

| Suffix | Description |
|--------|--------------------------------------|
| -PC | Photocell Control Switch Type 120VAC |
| -AO | Acoustic Control Switch |

* Add \$1.00 for each option.
* Add \$1.00 for each option.

Accessory

For the HPS-300 series, order the following:

| Catalog Number | Description | Wt. | Volts |
|----------------|--|-----|-------|
| HPS-303 | Case Mounting Bracket Containing mounting 300 with 12" HPS and 120VAC. HPS and 120VAC. HPS and 120VAC. HPS and 120VAC. | 3 | 1.2 |

Operating Characteristics

| Catalog Number | Input Watts | Input Volts | Input Amps | Power Factor |
|----------------|-------------|-------------|------------|--------------|
| HPS-301 | 60 | 120 | 1.83 | 0.42 |
| HPS-304 | 34 | 120 | 0.78 | 0.48 |
| HPS-307 | 22 | 120 | 0.50 | 0.43 |

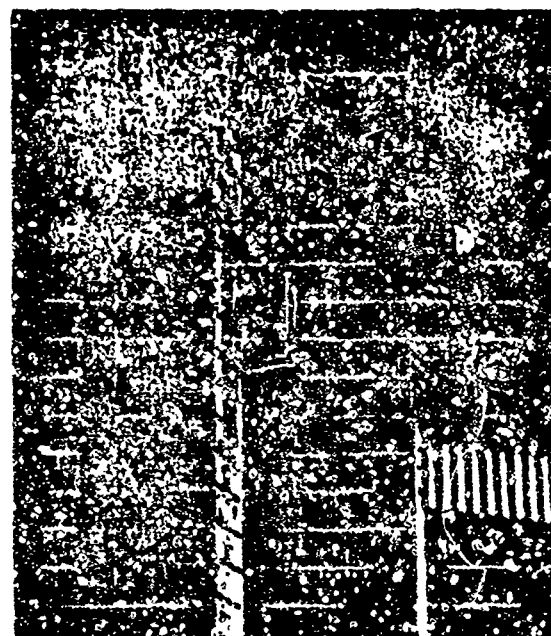
* Input Watts = Input Volts x Operating Amps x Power Factor.

Dimensions

Photocell (Optional)



Fluorescent



LUMASQUARE® I

NRG-400 SERIES

- Compact, Energy-Efficient Luminaire
- Aesthetic Appearance
- Safety, Security, Architectural Lighting

Hubbell's Lumasquare I luminaire is a compact, canopy ceiling mount fixture designed for new construction or retrofitting at 8-12 foot mounting heights. Available in 50w HPS, 28w fluorescent or incandescent, Lumasquare I is ideal for indoor or outdoor applications such as lobbies, stairwells, hallways, corridors, walkways and underpasses.

Housing — One-piece injection molded orange polycarbonate. Permanent color with textured finish.

Reflector — unique prismatic polycarbonate provides low brightness and uniform distribution.

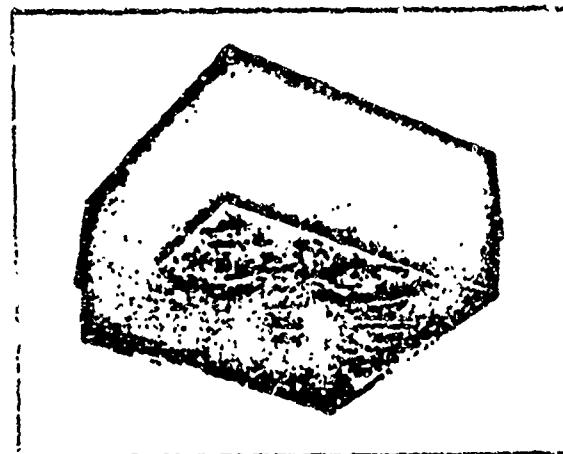
Reflector — HPS, one-piece hydroformed aluminum with ANODAL® finish for optimum performance. Reflector eliminates glare by shielding the arc tube from normal viewing angles. Fluorescent and incandescent aluminum with white LECTROCOAT® finish.

Lamp — HPS: clear 50w medium base lamp is furnished. Fluorescent: two twin tube lamps are furnished. Incandescent requires two T-10, 40w (maximum) lamps (not included).

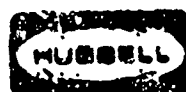
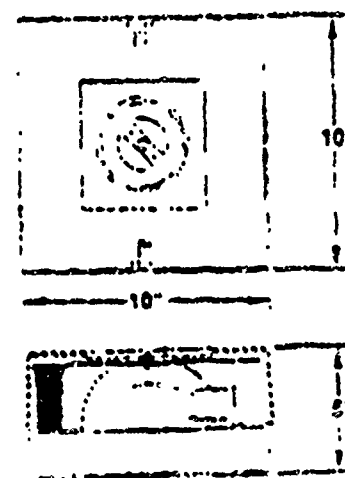
Ballast — HPS: 120 volt NP® or MPF reactor, or 277 volt MPF reactor/autotransformer combination. 60 Hz. Fluorescent: two 120 volt, or two 277 volt preheat NP® reactor 60 Hz (50 Hz. available contact factory).

Performance — IES Type I short cutoff distribution.

Additional Features — concealed hatching, tamper-resistant set screws available. Quick and easy to install. Two point mounting. UL 1570, 1571 and 1572 also suitable for damp locations.



DIMENSIONS



Lighting

| Co. map number | Watts | Voltage | Barrel | Diameter | |
|--------------------|--------|---------|-------------|----------|-----|
| | | | | mm | in. |
| NEW PASSIVE SOCIUM | | | | | |
| NRG-481 | 50 | 120 | standard | 1 | 2" |
| P.LUMINESCENT | | | | | |
| NRG-484.2 | 20 | 120 | Proprietary | 5 | 2.5 |
| INCANDESCENT | | | | | |
| NRG-488 | 25 max | 120 | - | 5 | 2.5 |

OPTIONS The following factory applied options are available. Order with the future by adding the appropriate suffix.

| Index | Description |
|-------|---|
| -277 | 277 volt transformer for H&S of Submarine |
| -340 | High power factor capacitor for H&S |

ACCESSORIES

Field installation with HAG-400 Series. Order separately.

| Catalog Number | Description | Weight | |
|----------------|---|--------|-----|
| | | lbs | ozs |
| 3-318-B | 1" cast aluminum round pusher bar for surface condenser
mounting with two mounting legs, four 7/8" tapered rods, and
flange | 4 | 5 |
| WEG-4-TR | TOPIC 4" lower steel 17-150 wrench and screw | 2.50 | 04 |

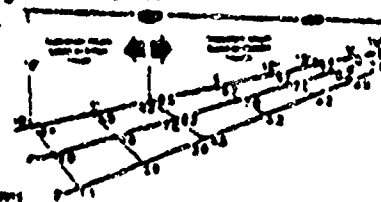
*TODR is a registered trademark of Testron, Inc.

Footcandle Array Diagram

NAG-401, 50 Watt High Pressure Sodium

From the Army School Of

- 18 Mourning Dove
- 18 Song Sparrow
- 18 Parula



| Quantity | Price |
|----------|-------|
| 1 | 1.00 |
| 2 | 2.00 |
| 3 | 3.00 |

Footcandle Array Diagram

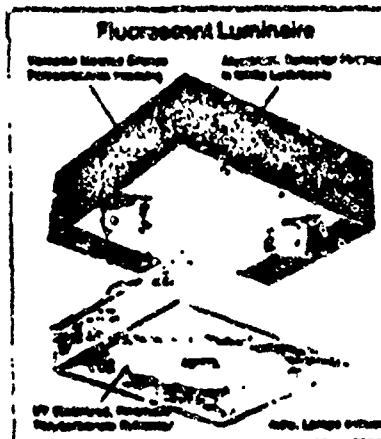
HPQ-406-2, 26 Watt Fluorescent

Form 1-500-A, 1-500-B, 1-500-C

- If Mourning: No
- No Mourning: Yes



- Dr. Vanden Berghe's research focuses on the
- Study of the genetic and environmental factors that



Suggested Specification

Luminaire must be Model Lighting Division
Luminaire Series, catalog number 110
for use with a _____ watt
1070

MECHANICAL

[illegible]

LECTURE 1

790 31-000 0 100 4238 011-100. 65 11 000
100-00000 00 001 0011 00 00000 000 0000. 10
21

DATE: 10-18-68 BY: J. H. B. / J. H. B.



Lighting

Musson Lighting Division, 2000 Electric Ave., Charlottesville, Virginia 22903, Tel: 382-1111 • Fax: 382-5236 • Telex: 92-0720
Musson Canada, Inc., 875 Brock Road E., Box 130 Pickering, Ontario, L1V 9J3, Tel: 336-1139 • Fax: 336-3378 • Telex: 66-36318
Harvey Musson, Ltd., P.O. Box 1000, Victoria, B.C. V8W 2E6, Canada, Tel: 383-7500 • Fax: 383-7500 • Telex: 3-268

4 PROJECT II: LIGHTING CONTROLS AT AIRFIELD

FOR EEAP LIGHTING ENERGY STUDY FT CAMPBELL KY

This section contains the Project Development Brochures and the DD 1391 Forms for Project II. Lighting Controls at Airfield. Following the DD 1391 Forms is a project summary table, the life cycle cost analysis for the project, and the calculations and cost estimates for each building included in the report. Please note the total cost for the project of \$60,078. The project does not meet the \$300,000 cut off for ECIP funding. However, the project has a very good SIR of 5.21 and a simple payback of 2.29 years. The project should be an excellent candidate for FEMP funding and was therefore not grouped in with a larger project with poorer economic results. Below is a detailed index of the information included in this section.

| | |
|--|-------------|
| PDBs | 4-2 |
| DD 1391 Forms | 4-18 |
| Table 4-1: Project Summary - Lighting Controls at Airfield | 26 |
| LCCA for Total Project | 4-27 |
| Building | Page |
| 7152 | 4-28 |
| 7154 | 4-33 |
| 7156 | 4-34 |
| 7206 | 4-44 |
| 7208 | 4-48 |
| 7210 | 4-53 |
| 7214 | 4-58 |
| 7218 | 4-63 |
| 7243 | 4-68 |
| 7245 | 4-73 |
| 7249 | 4-78 |
| 7262 | 4-83 |
| 7264 | 4-88 |
| 7268 | 4-93 |
| 7272 | 4-98 |
| Catalog Cut Sheets | 4-103 |

facility

LIGHTING CONTROLS AT CAMPBELL ARMY AIRFIELD
Fort Campbell, Kentucky

project coordinator for using service

Arlin Wright

functional requirements summary, PDB-1

4-2

DA FORM 6020-TN, Feb 62

TM 4-300-3 A-7

OBJECTIVE:

The objective of this project is to install daylight sensing on/off photocell controls in hangars at Campbell Army Airfield. The installation of these controls will reduce energy consumption and life cycle operating costs for the buildings at the Airfield in accordance with the Army Energy Resources Management Plan (ERMP) and Executive Order 12759.

functional requirements summary, PDB-1

4-3

APPENDIX C
DOCUMENTATION CHECKLIST

A. SPECIAL CONSIDERATIONS

| ITEM | Required or Not Required | By Whom | Comment Attached | Document Attached |
|--|--------------------------|---------|------------------|-------------------|
| A-1 Cost estimates for both primary and supporting facilities | R | E | | |
| A-2 Termination/transfer system coordination with USACC and authorization for exceptions | NR | | | |
| A-3 Coordination with state and local government requirements (land use, model facilities, construction and operating permits, environmental coordination, etc.) | R | A | | |
| A-4 Assignment of support | NR | | | |
| A-5 Economic analysis of alternatives | R | D | | |
| A-6 Approval for new start | NR | | | |
| A-7 International balance of payments (IBOP) coordination with U.S. European Command and NATO—submit cost estimates and programs (include rate of exchange used in estimates) | NR | | | |
| A-8 Impact on historic preservation site survey by authorized archeologist and coordination with state historic preservation officer and advisory council on historic preservation | NR | | | |
| A-9 Exceptions to established criteria | NR | | | |
| A-10 Coordination with various staff agencies (physical planning, security, etc.) | R | | | |
| A-11 Identification of related or support projects (to projects can be coordinated) | R | | | |
| A-12 Required completion date | R | | | |
| Other Special Considerations (List and number items) | | | | |
| 1. See Appendix A | | | | |

REQUIRED OR NOT REQUIRED - Not relevant or no information to submit. Enter "NR" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized on attached and indexed.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM (Check and insert appropriate letter)

- A - DPAE
- B - Long Service
- C - Construction Service
- D - Designer
- E - Other (Check Comments Attached and explain)

documentation checklist

4-6

DA FORM 5023-A-R, Feb 82

TM 5-300-3 C-3

B. SITE DEVELOPMENT

| ITEM | | Required or Not Required | By Whom | Comments | Document Attached |
|--|--|--------------------------|---------|----------|-------------------|
| B-1 | Consultation with the District Office in determining and evaluating listed place names | NR | | | |
| B-2 | Preparation, submission, and/or approval of map | | | | |
| (A) | General Site Plan | NR | | | |
| (B) | Annotated General Site Plan | NR | | | |
| (C) | Sketch Site Plan | NR | | | |
| (D) | Facilities Requirements Sketch | R | | | |
| B-3 | Preparation of | | | | |
| (A) | Site Survey | NR | | | |
| (B) | Support Information | NR | | | |
| B-4 | Approval by Department of Defense Explosive Safety Board (DESB) for Safety Site Plan | NR | | | |
| Other Site Development Considerations (List and number items): | | | | | |
| 1. See Project Development Brochure, PDS-1/2 | | | | | |

REQUIRED OR NOT REQUIRED - Not (NR) or no information to determine. Enter "R" if item is required and is required for the project. Enter "NR" if item is not required and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM (Check and insert appropriate letter)

A - OP&E
B - Using Service
C - Construction Service
D - Designer
E - Other (Check appropriate attached and explain)

documentation checklist

A-7

C. ARCHITECTURAL & STRUCTURAL

REV

| 1214 | | Project
Status | Task
Order | Com-
Action | Other
Action |
|--|---|-------------------|---------------|----------------|-----------------|
| C-1 | Recognition with host routing programs and requirements | NR | | | |
| C-2 | Evaluation of existing facilities including degree of utilization | R | D | | |
| C-3 | Approval for removal and relocation of existing usable facilities | NR | | | |
| C-4 | Evaluation of alternate community facilities | NR | | | |
| C-5 | Storage and maintenance facilities including nuclear weapons | NR | | | |
| C-6 | Coordination medical, medical and dental facilities with Surgeon General | NR | | | |
| C-7 | Coordination of aviation facilities with SAA | NR | | | |
| C-8 | Coordination air traffic control and navigational aids with USACC | NR | | | |
| C-9 | Tabulation of types and numbers of aircraft | NR | | | |
| C-10 | Evaluation of laboratory, research and development, and technical maintenance facilities | NR | | | |
| C-11 | Coordination phases with Chief of Chaplains | NR | | | |
| C-12 | Review food service facilities by USAFSA | NR | | | |
| C-13 | Automatic data processing system of equipment approval-call and via other ACP and/or communication systems not coordinated with existing facilities | NR | | | |
| C-14 | Coordination postal facilities with U.S. Postal Service Regional Director | NR | | | |
| C-15 | Laundry and dry cleaning facilities coordination with ASD/ISL | NR | | | |
| C-16 | Tenant facilities coordination with installation where sites | NR | | | |
| C-17 | Facilities for or exposed to explosion, toxic chemicals, or ammunition-review by DDESB 1500 and item 5-41 | NR | | | |
| C-18 | Analysis of techniques | R | D | | 1 |
| C-19 | Consideration of alternatives | R | D | | 2 |
| C-20 | Determination whether occupants will include physically handicapped or disabled persons | NR | | | |
| C-21 | Architect drawings for alterations or additions | R | C | | |
| C-22 | Availability of Standard Design or the prototype designs | NR | | | |
| Other Architecture & Structural (List and number items): | | | | | |
| 1. See Supplemental Data
Detailed Project Justification
Paragraphs D3. | | | | | |
| 2. See Supplemental Data
Detailed Project Justification
Paragraph D4. | | | | | |

REQUIRE DRAO REQUIRED - NOT RECOMMENDED TO BE
 RECOMMENDED. FROM "A" IS FROM 1. RECOMMENDED TO BE RECOMMENDED.
 FROM "B" IS FROM 1. RECOMMENDED TO BE RECOMMENDED

TO BE DETERMINED - Intelligence needed but not sufficient on hand.
 [unclear] for information [unclear]

COMMENT ATTACHED - Significant information summarized at end of message and attached.

DOCUMENT ATTACHED - Significant information is in an ordinary document.

• BY WHOM (Name of the person who is the owner)

4-3846

2 - Using Barcode

C - Continuation of

2 - Original

U. S. Office (Cross Community Activities and
Education)

documentation checklist 4-8

4-8

DA FORM 5023-C.R, Feb 62

TNI S-R00-3 C-0

D. MECHANICAL ELECTRICAL & UTILITY SYSTEMS

| ITEM | | Required or Not Required | To Be Determined | Comment Attached | Document Attached |
|--|--|--------------------------|------------------|------------------|-------------------|
| 1 | Fuel configuration and cost comparison analysis | | | | |
| D-2 | Energy requirements approved (EHA) | | | | |
| D-3 | Conformance with DOD Energy Regulation requirements | | | | |
| D-4 | Evaluation of existing and/or proposed utility systems | | | | |
| Other Mechanical and Utility Systems (List and number items) | | | | | |
| 1. See Special Requirements, Paragraph 3 (SRF-3) | | | | | |

REQUIRED OR NOT REQUIRED - Not relevant or no information is furnished. Enter "R" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM (Check and insert appropriate letter)

A - O&A

B - Using Service

C - Construction Service

D - Designer

E - Other (Check Comments Attached and specify)

documentation checklist

4-9

DA FORM 5023-D-R, Feb 82

TM 5-900-3 C-11

E. ENVIRONMENTAL CONSIDERATIONS

| ITEM | | Required by
This Regulation | To Be
Determined | Comment
Attached | Document
Attached |
|---|--|--------------------------------|---------------------|---------------------|----------------------|
| E-1 | Environmental Impact Statement | R | D | | |
| E-2 | EIA conclusions require Environmental Impact Statement | NR | | | |
| E-3 | Determination of health, environmental or related hazards. Assistance in determining existence of any health, environmental or related hazard may be requested from Aberdeen Proving Ground, MD 21010, the Office of the Surgeon General, APO DASG-HQ (Army Environmental Hygiene Agency). | NR | | | |
| E-4 | Air/water pollution permit; coordination with agencies and compliance with standards at Federal, State and local level | NR | | | |
| E-5 | Corrective measures associated with Environmental Impact Statements or assessments - all necessary and available | NR | | | |
| Other environmental considerations (list and number items) | | | | | |
| 1. See Supplemental Data
Detailed Project Justification
Paragraph 59. | | | | | |

REQUIRED OR NOT REQUIRED - Not required or no information is submitted. Enter "R" if item is required and is required for the project. Enter "NR" if item is not required and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for Agency of source.

COMMENT ATTACHED - Significant information summarized at assigned and entered.

DOCUMENT ATTACHED - Significant information is in an existing document which is entered.

* BY AUC/DM (Check and insert appropriate letter)

A - AFCE
B - Army Service
C - Construction Service
D - Design
E - Other (Check Comments Attached and explain)

documentation checklist

4-10

DA FORM 5023-E-R, Feb 82

TN 5-800-3 G-13

APPENDIX D
TECHNICAL DATA CHECKLIST

A. SPECIAL CONSIDERATIONS

1. EN

| | |
|-----|--|
| A-1 | Factor of this project or unique circumstances affecting in the basic cells and the sub-structure and overage |
| A-2 | Construction and/or requirements |
| A-3 | Functions support equipment, mechanical, electrical, structural and special - if or built in |
| A-4 | Requirements in order and justification |
| A-5 | Other equipment and furniture (O&F) and costs |
| A-6 | Special studies and tests (thermal, vibration, compatibility, aging, etc.) |
| A-7 | Type of contract: permanent, temporary, competitive |
| A-8 | Government: equipment quantities, procurement time, availability and special handling and storage requirements. Funds used for procurement |

Other special considerations (if any) and number items

| Required by
Type of Project | By
By No. | Comments | Equipment
Requirements | Support
Requirements |
|--------------------------------|--------------|----------|---------------------------|-------------------------|
| NE | | | | |
| S | | | | |
| NE | | | | |
| NE | | | | |
| NE | | | | |
| NE | | | | |
| NE | | | | |
| NE | | | | |

REQUIRED OR NOT REQUIRED - For relevant or information to be furnished. Enter "R" if item is relevant and is required for the project. Enter "NR" if item is irrelevant and is not required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

KEY WORDS (Check one and insert code/number - letter)

A - Basic
S - Using Service
C - Construction Service
D - Designer
I - Other (Check Common Abbreviation and explain)

technical data checklist

DA FORM 5024-A-R, Feb 82

| B. SITE DEVELOPMENT | | Required or Not Required | To Be Determined | Comment Attached | Document Attached |
|---|---|--|------------------|------------------|-------------------|
| ITEV | | | | | |
| B-1 | Construction restrictions or guidelines pertaining to site access and preferred construction routes | R | A | | |
| (A) | | | | | |
| (B) | Airfield clearance, explosive storage, working hours, safety, etc. | R | A | | |
| (C) | Facilities and/or functions of adjoining areas (structures, materials, impact) | R | A | | |
| B-2 | Real estate actions (acquisition, disposal, lease, right-of-way) | NR | | | |
| B-3 | Demolition/relocation required (date) | | | | |
| (A) | Special considerations due to explosives radioactivity chemical contamination asbestos embers and toxic gases | NR | | | |
| (B) | Restrictions on disposal of demolished/relocated material including hazardous waste | NR | | | |
| B-4 | Pavement types and requirements (including traffic surveys and MTMC coordination) | NR | | | |
| B-5 | Landscape considerations | | | | |
| (A) | Protection of existing vegetation | R | A | | |
| (B) | Stockpile topsoil | NR | | | |
| Other Site Development (List and number items) | | | | | |
| <p>REQUIRED OR NOT REQUIRED - Not required or no information to comment. Enter "R" if item is required and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.</p> <p>TO BE DETERMINED - Information needed but not currently available. Enter code for information source.</p> <p>COMMENT ATTACHED - Significant information summarized or explained and attached.</p> <p>DOCUMENT ATTACHED - Significant information is in an existing document which is attached.</p> | | <p>BY WHOM (Check and insert additional letter)</p> <p>A - DPAC
 B - Using Service
 C - Construction Service
 D - Designer
 E - Other (Check Comments Attached and explain)</p> | | | |

technical data checklist

4-13

DA FORM 5024-S-R, Feb 82

TM 5-410-3 D-7

C. ARCHITECTURAL & STRUCTURAL

| ITEM | |
|--|---|
| C-1 | Vibration-producing equipment requiring isolation |
| C-2 | Seismic zone and other design load criteria (typhoon, hurricane, earthquake loads, high or low wind potential) |
| C-3 | Protective shelter evaluation and resistant design criteria (conventional structure, blast and radiation, chemical/biological) |
| C-4 | Unusual foundation requirements (sway, pile, caisson, sand foundations, mat, special treatment, permeation proof, soil bearing) |
| C-5 | Designation and strength of units to be accommodated |
| C-6 | Requirements and data for special design projects |
| C-7 | Unusual floor and roof loads (stair, equipment) |
| C-8 | Security features (armor rooms, vaults, interior security areas) |
| Other Architectural & Structural (List and number items) | |

| Required or Not Required | To Be Determined | Comments Attached | Document Attached |
|--------------------------|------------------|-------------------|-------------------|
| R | D | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |

REQUIRED OR NOT REQUIRED - Not required or no information to complete. Enter "R" if item is required and is required for this project. Enter "NR" if item is not required and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter "D" for information needed.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM CHECKED AND DATE (Check and date appropriate to item)

A - AFAC
B - Using Service
C - Construction Service
R - Designer
E - Other (Check Code, Att Attached and Note At)

technical data checklist

4-14

D. MECHANICAL, ELECTRICAL & UTILITY SYSTEMS

| D. MECHANICAL, ELECTRICAL & UTILITY SYSTEMS | |
|---|--|
| D-1 | Special mechanical requirements or considerations relative to the project |
| D-2 | Special design considerations and special requirements |
| D-3 | Maintenance considerations, accessibility of equipment, compatibility with existing equipment |
| D-4 | Plumbing—availability, general system type and characteristics (pressure and/or existing, etc.) |
| D-5 | Heating—availability, general system type and characteristics (pressure and/or existing) |
| D-6 | Ventilating or conditioning/refrigeration—availability, general system type and characteristics (pressure and/or existing) |
| D-7 | Electrical—availability, general system type and characteristics (lighting, communication, etc.) |
| D-8 | Water supply/sewer treatment—availability, general system type and characteristics (pressure and/or existing) |
| D-9 | Energy requirements (fuel consumption, source and availability, etc.) |
| D-10 | Solar energy production |
| Other Mechanical & Utility Systems List and number them | |

| Required by
the Project | To Be
Determined | Comments
Attached | Document
Attached |
|----------------------------|---------------------|----------------------|----------------------|
| NR | | | |
| NR | | | |
| R | D | | |
| NR | D | | |
| NR | | | |
| R | D | | |
| NR | | | |
| NR | | | |
| A | D | | |
| NR | | | |

REQUIRED OR NOT REQUIRED — Not required or no information to communicate. Enter "NR". If item is required and is required for the project. Enter "R". If item is required and is not required for the project. Enter "NR".

TO BE DETERMINED — Information needed but not currently available. Enter "D".

COMMENT ATTACHED — Significant information summarized or explained and attached.

DOCUMENT ATTACHED — Significant information or a copy of the document is attached.

BY WHOM CHECKED AND DATE OF CHECK

A — BPAE
E — Engineering
C — Construction Service
D — Designer
F — Other (Check Comments Attached and explain)

technical data checklist

4-15

QA FORM 5024-D-R, Feb 82

TN 5-800-3 0-11

E. ENVIRONMENTAL CONSIDERATIONS

| ITEM | | Required or Not Required | To Be Determined | Comment Attached | Document Attached |
|------|--|--------------------------|------------------|------------------|-------------------|
| E-1 | Waste water treatment, air quality, and noise levels of adjacent areas
Other Environmental Considerations (List and number items) | NR | | | |

REQUIRED OR NOT REQUIRED - Not relevant or no information is available. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM CHECKED (Use above abbreviation letter)

- A - DPAE
- B - Using Service
- C - Construction Service
- D - Designer
- E - Other (Check Comments Attached and explain)

technical data checklist

4-16

DA FORM 5024-E-R, Feb 82

TM 5-300-3 9-12

F. FIRE PROTECTION

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A. B. C.

A. B. C.

10/10/10

(7) 0000008

TN 8-500-3 0-15

| | | | | | |
|---|------------------|--|---|-------------------------|-------------|
| 1. COMPONENT
ARMY | | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE
23 September | |
| 3. INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | | 4. PROJECT TITLE
Lighting Controls at Airfield | | |
| 5. PROGRAM ELEMENT | 6. CATEGORY CODE | 7. PROJECT NUMBER
ECIP #2 | 8. PROJECT COST (\$000)
\$60.08 | | |
| 9. COST ESTIMATES | | | | | |
| ITEM | | U/M | QUANTITY | UNIT
COST | CO
(\$0) |
| Primary Facility | | | | | |
| Daylight Sensing On/Off Protocol Controls | | Lol | 1 | 51.77 | |
| Subtotal | | | | | |
| Contingency (10%) | | | | | |
| Total Contract Cost | | | | | |
| Supervision, Inspection and Overhead (5.5%) | | | | | |
| Total Request | | | | | |
| 10. DESCRIPTION OF PROPOSED CONSTRUCTION | | | | | |
| <p>The existing interior lighting is a combination of mercury vapor, metal halide, and high pressure sodium fixtures. The proposed project will install daylight sensing on/off photocell controls on these fixtures. Implementation of this project will save 669,466 MJ/yr of electrical energy. The first year dollar savings is \$26,209, the Savings to Investment Ratio (SIR) is 5.21, and the simple payback is 2.29 years.</p> | | | | | |
| 11. REQUIREMENT | | | | | |
| <p>Project: The proposed project installs daylight sensing on/off photocell controls on the fixtures in the high areas of buildings 7152, 7154, 7156, 7206, 7208, 7210, 7214, 7216, 7243, 7245, 7248, 7262, 7264, 7268, 7272.</p> <p>Requirement: The project is required to reduce the energy consumption of lighting and to comply with the Energy Resources Management Plan (ERMP) and Executive Order 12759. The proposed project will reduce annual energy consumption by 669,466 MJ/yr and annual energy cost by \$26,209.</p> <p>Current Situation: The existing fixtures in the above listed buildings have no controls to allow energy savings other than manual switches. The lights are not being switched off during peak daylight hours.</p> | | | | | |

DD FORM 139
1 DEC 76

PREVIOUS EDITIONS MAY BE USED INTERNALLY
UNLESS EXHAUSTED

FOR OFFICIAL USE ONLY

ORIGINAL DATA IS ENTERED

| | | | |
|--|--|-----------------------------|------------------------|
| 1 COMPONENT
ARMY | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | | 2 DATE
23 September |
| 3 INSTALLATION AND LOCATION
Fort Campbell Kentucky | | | |
| 4 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | | 5 PROJECT NUMBER
ECIP 42 | |
| <p>Impact if not provided: If the proposed project is not funded, a reduction of 669,466 MJ/yr cannot be achieved and excessive amounts of energy will continue to be used. There will be no contribution to energy reduction goals established for United States Army facilities by Army Headquarters.</p> | | | |
| <p>Colonel USA
Commanding</p> | | | |
| ESTIMATED CONSTRUCTION START | | September 1995 | INI |
| ESTIMATED MIDPOINT OF CONSTRUCTION | | April 1996 | INI |
| ESTIMATED CONSTRUCTION COMPLETION | | November 1996 | INI |
| <p align="center">DETAILED JUSTIFICATIONS</p> | | | |
| <p>D1. GENERAL</p> <p>The proposed project encompasses the installation of daylight sensing on/off photocell controls in the areas of buildings 7152, 7154, 7156, 7206, 7208, 7210, 7214, 7218, 7243, 7245, 7248, 7262, 7264, 7268, 7272. The project will decrease the energy consumption of the lighting systems by taking advantage of available daylight while maintaining required light levels.</p> | | | |
| <p>D2. ACCOMMODATIONS NOW IN USE:</p> <p>The existing lighting systems are comprised of high intensity discharge fixtures with manual on/off controls.</p> | | | |
| <p>D3. ANALYSIS OF DEFICIENCY:</p> <p>Currently, the above hangars are using manual switches to control the lighting systems in high bay areas. The purpose of this project is to install automatic daylight sensing photocell controllers which will take advantage of free daylighting available. The current deficiency results in large amounts of energy usage during periods when artificial lighting is not necessary to maintain adequate light levels.</p> | | | |

| | | |
|---------------------|---|--------------------------|
| 1 COMPONENT
ARMY | 2 PROJECT TITLE
FY 19 <u>84</u> MILITARY CONSTRUCTION PROJECT DATA | 3 DATE
23 September 8 |
|---------------------|---|--------------------------|

4 INSTALLATION AND LOCATION
Fort Campbell, Kentucky

| | |
|--|-----------------------------|
| 5 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | 6 PROJECT NUMBER
ECIP #2 |
|--|-----------------------------|

D4. CONSIDERATION OF ALTERNATIVES:

The only alternatives to the proposed project are to install more sophisticated automatic control system. These systems would cost significantly more while providing minimal additional energy savings. The project would have a lower SIR.

D5. CRITERIA FOR PROPOSED PROJECT:

The proposed project will conform with all applicable federal and United States Army Regulations.

D6. PROGRAM FOR RELATED EQUIPMENT:

No equipment funded from appropriations other than MCA are required.

D7. DISPOSAL OF PRESENT ASSETS:

There is no material to be disposed.

D8. SURVIVAL FACILITIES:

The proposed project is not suitable for inclusion of protective shelters.

D9. SUMMARY OF ENVIRONMENTAL CONSEQUENCES:

The proposed project has been analyzed and will not adversely impact the environment. Energy savings resulting from the project will conserve natural resources.

D10. EVALUATION OF FLOOD HAZARDS AND ENCROACHMENT ON WETLANDS:

It has been determined that these facilities are not located in a flood plain and they do not encroach wetlands.

D11. ECONOMIC JUSTIFICATION:

The proposed project qualifies under ECIP Guidelines in AR-415-15. SIR for the project is 5.21 with a simple payback of 2.29 years.
See Economic Analysis, SRP-1

DD FORM 1381
1 DEC 78

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UNTIL EXHAUSTED

FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

| | |
|--|-----------------------------|
| 1 COMPONENT
ARMY | 2 DATE
23 September 9 |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | |
| 4 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | 5 PROJECT NUMBER
ECIP #2 |

D12. UTILITY AND COMMUNICATION SUPPORT.

- A. No related utility support projects are programmed. Adequate utilities are available to support project.
- B. No telecommunication support is required.

D13. PROTECTION OF HISTORIC PLACES AND ARCHEOLOGICAL SITES:

The project involves the installation of controls in existing buildings. Review procedures have been implemented for this project in accordance with 36 CFT 800. The review has established that there will be effect.

D14. PROJECT DEVELOPMENT BROCHURE (PART 1):

A Project Development Brochure was prepared on 23 September 94 and is attached as a part of programming documentation.

D15. ENERGY REQUIREMENTS:

The proposed project will reduce present energy consumption by 669,466 MJ/yr at the cost savings of \$26, per year. See Energy Requirements Appraisal (ERA) in Special Requirements, Paragraph 3 (SRP-3).

D16. PROVISION FOR THE HANDICAPPED:

No provisions for the handicapped will be made since the scope of the project is in no way applicable designing for the handicapped.

D17. REAL PROPERTY MAINTENANCE ACTIVITY (RPVA) ANALYSIS:

- A. Physical impact: No new structures will be added. Controls will be connected to existing light fixture.

| | |
|--|-----------------------------|
| 1 COMPONENT
ARMY | 2 DATE
23 September 94 |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | |
| 4 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | 5 PROJECT NUMBER
ECIP #2 |

B. Operations and Maintenance (O&M) impact:

| YEAR | O&M
NET CHANGE (\$000) |
|------|---------------------------|
| 1994 | 0 |
| 1995 | 0 |
| 1996 | 0 |

C. Backlog of Maintenance and Repair (BMAR) impact:

There will be no net change in the number of fixtures or in fixture life expectancy. There will be no effect on BMAR.

D18. COMMERCIAL ACTIVITIES:

The proposed project is not a "New Start Expansion" as defined by DA Circular 235-1. The project has been reviewed in light of the requirements of commercial and industrial facilities. It has been determined that whereas the project does not affect commercial facilities, the requirements of DA Circular 235-1 does not apply.

DD FORM 1381
1 DEC 76

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UNTIL SUPPLISHED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

| | |
|--|-----------------------------|
| 1 COMPONENT
ARMY | 2 DATE
23 September 84 |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | |
| 4 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | 5 PROJECT NUMBER
ECIP #2 |

Life Cycle Cost Analysis
 Project Title: Lighting Controls at Airfield
 Fiscal Year: 1994
 Analysis Date 09/23/94
 Economic Life: Fifteen (15) Years

1 INVESTMENT

| | |
|----------------------|--------|
| A CONSTRUCTION COST | 54,818 |
| B SICH | 2,731 |
| C DESIGN COST | 2,731 |
| D ENERGY CREDIT CALC | 0 |
| E SALVAGE VALUE | 0 |
| F TOTAL INVESTMENT | 60,280 |

2 ENERGY SAVINGS
 ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNTED SAVINGS

| FUEL | COST
\$/GAL (1) | SAVINGS
MBTU/YR (2) | ANNUAL \$
SAVINGS (3) | DISCOUNT
FACTOR (4) | DISCOUNTED
SAVINGS (5) |
|----------|--------------------|------------------------|--------------------------|------------------------|---------------------------|
| A. ELECT | 6.18 | 634 | 3,921 | 12.43 | 48,738 |
| B. DIST | | | | | |
| C. RESID | | | | | |
| D NG | | | | | |
| E DEMAND | | | 22,288 | 11.85 | 264,113 |
| F. TOTAL | | 634 | 26,209 | | 312,851 |

3. NON-ENERGY SAVINGS

| | | |
|---|-------|-----|
| A ANNUAL RECURRING
(1) DISCOUNT FACTOR | 11.85 | \$0 |
| (2) DISCOUNTED SAVINGS | | \$0 |
| B NON-RECURRING
SAVINGS | | |

| ITEM | SAVINGS (+)
COST (-) (1) | YEAR OF
OCCURRENCE (2) | DISCOUNT
FACTOR (3) | DISCOUNTED
SAVINGS (+)
COST (-) (4) |
|---------------------|-----------------------------|---------------------------|------------------------|---|
| a. Replace Interior | | | | |
| b. Replace Exterior | | | | |
| c. | | | | |
| d. Total | | | | |

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) COST (-)

DD FORM 1291
1 DEC 78

PREVIOUS EDITIONS MAY BE USED INTERNALLY
 UNTIL EXHAUSTED
FOR OFFICIAL USE ONLY
 (WHEN DATA IS ENTERED)

| | | |
|---------------------|--|---------------------------|
| 1 COMPONENT
ARMY | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | 2 DATE
23 September 94 |
|---------------------|--|---------------------------|

3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky

| | |
|--|------------------------------|
| 4 PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | 5. PROJECT NUMBER
ECIP #2 |
|--|------------------------------|

SPECIAL REQUIREMENTS PARAGRAPH 1 (SRP-1) (continued)

| | |
|--------------------------------|-----------|
| 4 FIRST YEAR DOLLAR SAVINGS | \$ 28.20 |
| 5 SIMPLE PAYBACK PERIOD | 2.29 Year |
| 6 TOTAL NET DISCOUNTED SAVINGS | \$312.85 |
| 7 DISCOUNTED SAVINGS RATIO | 52 |

DD FORM 1381
1 DEC 78

PREVIOUS EDITIONS MAY BE USED
UNTY. EXHAUSTED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

| | | |
|---|--|------------------------------|
| 1. COMPONENT
ARMY | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | 2. DATE
23 September 9. |
| 3. INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | |
| 4. PROJECT TITLE
LIGHTING CONTROLS AT AIRFIELD | | 5. PROJECT NUMBER
ECIP #2 |

SPECIAL REQUIREMENTS PARAGRAPH 3 (SRP-3):

Energy Requirements Appraisal (ERA)

1. Project Description: Install daylight sensing photocell controls on the existing fixtures in the base areas of the airfield hangars.
2. Estimated Energy Consumption: The lighting systems are currently controlled by manual switches. The existing systems consume 4,973,174 MJ/yr of energy. Installing the daylight sensing controls will result in 669,466 MJ/yr of electrical energy savings, a thirteen (13%) reduction in current energy consumption.
3. Energy Sources: No new energy sources are required for the proposed project. The use of solar energy for this project is impractical.
4. Energy Use Impacts: The proposed project will substantially reduce the consumption of electricity for lighting. The burden on the existing base distribution system will be lessened.
5. Energy Conservation: The proposed project will reduce annual energy consumption by 669,466 MJ/yr with annual energy cost savings of \$28,209. The project complies with Army Resource Management Plan (ERMP) and Executive Order 12759.
6. Energy Alternatives: The proposed project represents the greatest possible reduction in energy consumption (thirteen percent (13%)), while maintaining appropriate light levels. The current levels do not exceed the levels recommended by ASHRAE.
7. Energy Effects: The proposed project provides positive environmental effects. It reduces current energy consumption by thirteen percent (13%), effectively reducing the consumption of non-renewable fuel sources. The degrading of environmental standards would not make more efficient energy sources available.
8. Basis of Approval: Total energy requirements and alternative fuel sources have been considered and included in this appraisal or discarded as applicable.

SD FORM 130
1 DEC 78

PREVIOUS EDITIONS MAY BE USED INTERNALLY
UNLESS EXHAUSTED
FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

| ECO CODE | CHLASS NAME | BASLINE BUDGET \$K | COO BUDGET \$K | ENERGY SAVINGS \$K | 1979-1980 SAVINGS \$K | DEFERMENT COSTS | AIRFIELD DISCOUNTS | SPD (%) | MR | NATIONAL COSTS | LABOR COSTS | ADDITIONAL COSTS | TOTAL COST ESTIMATE |
|----------|-------------|--------------------|----------------|--------------------|-----------------------|-----------------|--------------------|---------|------|----------------|-------------|------------------|---------------------|
| 2 | 3152 | 12,125 | 71,573 | 11,800 | 2820 | 52,620 | 30 | 3.95 | 2.93 | \$1,988 | \$1,894 | \$975 | \$2,400 |
| 2 | 7160 | 68,125 | 71,800 | 11,800 | 2820 | 52,620 | 30 | 3.95 | 2.93 | \$1,988 | \$1,894 | \$975 | \$2,400 |
| 2 | 7165 | 70,284 | 70,284 | 12,125 | 3280 | 52,178 | 32 | 5.70 | 2.25 | \$1,054 | \$1,054 | \$0 | \$2,400 |
| 2 | 7166 | 57,000 | 58,071 | 26,184 | 91,840 | 24,548 | 32 | 2.88 | 3.73 | 90,371 | \$734 | \$660 | \$2,170 |
| 2 | 7168 | 287,265 | 287,265 | 26,184 | 21,840 | 24,548 | 32 | 1.88 | 4.22 | \$1,030 | \$1,030 | \$1,170 | \$3,550 |
| 2 | 7169 | 108,774 | 108,774 | 26,206 | 3281 | 52,586 | 30 | 5.52 | 1.77 | \$1,010 | \$1,010 | \$651 | \$3,649 |
| 2 | 7210 | 1,853 | 52,523 | 14,645 | 32,523 | 54,549 | 30 | 1.78 | 6.80 | \$1,981 | \$1,483 | \$1,170 | \$4,548 |
| 2 | 7210 | 57,173 | 57,173 | 77,000 | 52,572 | 28,121 | 30 | 1.79 | 6.80 | \$1,981 | \$1,483 | \$1,170 | \$4,548 |
| 2 | 7210 | 387,500 | 387,500 | 49,874 | 38,121 | 54,549 | 30 | 4.88 | 6.80 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7215 | 210,314 | 210,314 | 28,400 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7240 | 210,314 | 210,314 | 28,400 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7240 | 777,524 | 777,524 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7245 | 487,187 | 487,187 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7245 | 262,391 | 262,391 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7250 | 262,391 | 262,391 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7277 | 262,391 | 262,391 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| TOTALS | | 4,673,594 | 4,398,790 | 600,400 | 228,529 | 900,899 | 30 | 2.38 | 5.31 | \$25,315 | \$19,374 | \$15,400 | 900,679 |

| ECO CODE | CHLASS NAME | BASLINE BUDGET \$K | COO BUDGET \$K | ENERGY SAVINGS \$K | 1979-1980 SAVINGS \$K | DEFERMENT COSTS | AIRFIELD DISCOUNTS | SPD (%) | MR | NATIONAL COSTS | LABOR COSTS | ADDITIONAL COSTS | TOTAL COST ESTIMATE |
|----------|-------------|--------------------|----------------|--------------------|-----------------------|-----------------|--------------------|---------|------|----------------|-------------|------------------|---------------------|
| 2 | 3152 | 12,125 | 71,573 | 11,800 | 2820 | 52,620 | 30 | 3.95 | 2.93 | \$1,988 | \$1,894 | \$975 | \$2,400 |
| 2 | 7160 | 68,125 | 71,800 | 11,800 | 2820 | 52,620 | 30 | 3.95 | 2.93 | \$1,988 | \$1,894 | \$975 | \$2,400 |
| 2 | 7165 | 70,284 | 70,284 | 12,125 | 3280 | 52,178 | 32 | 5.70 | 2.25 | \$1,054 | \$1,054 | \$0 | \$2,400 |
| 2 | 7166 | 57,000 | 58,071 | 26,184 | 91,840 | 24,548 | 32 | 2.88 | 3.73 | 90,371 | \$734 | \$660 | \$2,170 |
| 2 | 7168 | 287,265 | 287,265 | 26,184 | 21,840 | 24,548 | 32 | 1.88 | 4.22 | \$1,030 | \$1,030 | \$1,170 | \$3,550 |
| 2 | 7169 | 108,774 | 108,774 | 26,206 | 3281 | 52,586 | 30 | 5.52 | 1.77 | \$1,010 | \$1,010 | \$651 | \$3,649 |
| 2 | 7210 | 1,853 | 52,523 | 14,645 | 32,523 | 54,549 | 30 | 1.78 | 6.80 | \$1,981 | \$1,483 | \$1,170 | \$4,548 |
| 2 | 7210 | 57,173 | 57,173 | 77,000 | 52,572 | 28,121 | 30 | 1.79 | 6.80 | \$1,981 | \$1,483 | \$1,170 | \$4,548 |
| 2 | 7210 | 387,500 | 387,500 | 49,874 | 38,121 | 54,549 | 30 | 4.88 | 6.80 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7215 | 102,534 | 102,534 | 28,400 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7216 | 298,911 | 298,911 | 28,400 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7216 | 777,524 | 777,524 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7216 | 487,917 | 487,917 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7216 | 344,380 | 344,380 | 67,900 | 38,121 | 54,549 | 30 | 4.88 | 2.61 | \$1,981 | \$1,182 | \$1,170 | \$4,548 |
| 2 | 7217 | 352,000 | 352,000 | 70,157 | 38,121 | 54,549 | 30 | 2.47 | 4.82 | \$1,517 | \$1,517 | \$1,170 | \$3,473 |
| TOTALS | | 4,673,594 | 4,398,790 | 600,400 | 628,529 | 600,400 | 30 | 2.38 | 5.31 | \$25,315 | \$19,374 | \$18,400 | \$98,679 |

LIFE CYCLE COST ANALYSIS SUMMARY
 ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
 INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3
 PROJECT NO. & TITLE: ECO2AAFT LIGHTING CONTROLS - AIRFIELD TOTAL
 FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING
 ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLENSE

STUDY: ECO2AAFT
 LCCID 1.08C

1. INVESTMENT
 A. CONSTRUCTION COST \$ 54616.
 B. SIOH \$ 2731.
 C. DESIGN COST \$ 2731.
 D. TOTAL COST (1A+1B+1C) \$ 60078.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0.
 F. PUBLIC UTILITY COMPANY REBATE \$ 0.
 G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 60078.

2. ENERGY SAVINGS (-) / COST (-)
 DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

| FUEL | UNIT COST
\$/MBTU(1) | SAVINGS
MBTU/YR(2) | ANNUAL \$
SAVINGS(3) | DISCOUNT
FACTOR(4) | DISCOUNTED
SAVINGS(5) |
|-------------------|-------------------------|-----------------------|-------------------------|-----------------------|--------------------------|
| A. ELECT | \$ 6.18 | 634. | \$ 3921. | 12.43 | \$ 48738. |
| B. DIST | \$.00 | 0. | \$ 0. | 13.56 | \$ 0. |
| C. RESID | \$.00 | 0. | \$ 0. | 15.09 | \$ 0. |
| D. NAT G | \$.00 | 0. | \$ 0. | 15.86 | \$ 0. |
| E. COAL | \$.00 | 0. | \$ 0. | 13.61 | \$ 0. |
| F. LPG | \$.00 | 0. | \$ 0. | 12.64 | \$ 0. |
| M. DEMAND SAVINGS | | | \$ 22288 | 11.85 | \$ 264113. |
| N. TOTAL | | 634. | \$ 26209. | | \$ 312851. |

3. NON ENERGY SAVINGS(-) / COST(-)

A. ANNUAL RECURRING (+/-)
 (1) DISCOUNT FACTOR (TABLE 2) 11.85
 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 0.

B. NON RECURRING SAVINGS(+) / COSTS(-)

| ITEM | SAVINGS(+) /
COST(-)
(1) | YR
OC
(2) | DISCNT
FACTR
(3) | DISCOUNTED
SAVINGS(+) /
COST(-) (4) |
|----------|--------------------------------|-----------------|------------------------|---|
| d. TOTAL | \$ 0. | | | 0. |

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(-) / COST(-) (3A2+3Bd4) \$ 0.

4. FIRST YEAR DOLLAR SAVINGS 2N3+3A-(3Bd1/(YRS ECONOMIC LIFE)) \$ 26209.

5. SIMPLE PAYBACK PERIOD (1G/4) 2.79 YR

6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 312851

7. SAVINGS TO INVESTMENT RATIO (SIR) = (6 / 1G) = 5.21
 (IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 15.09 %

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS
ENERGY CHARGE \$2.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

BUILDING #: 7152
AREA: HANGAR BAY

LIGHTING CONTROLLED: 11 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

| CURRENT USAGE | REVERSED USAGE: |
|----------------|-----------------|
| FULL DAY | FULL DAY |
| DAY/NEEK | DAY/NEEK |
| WEEKS/YR | WEEKS/YR |
| DEMAND (KW/YR) | DEMAND (KW/YR) |

| BASLINE ENERGY CONSUMPTION | ECO ENERGY CONSUMPTION |
|----------------------------|------------------------|
| 22,813 KWH | 10,742 KWH |
| 22,128 MJ | 71,073 MJ |
| 37,500 | 31,634 |

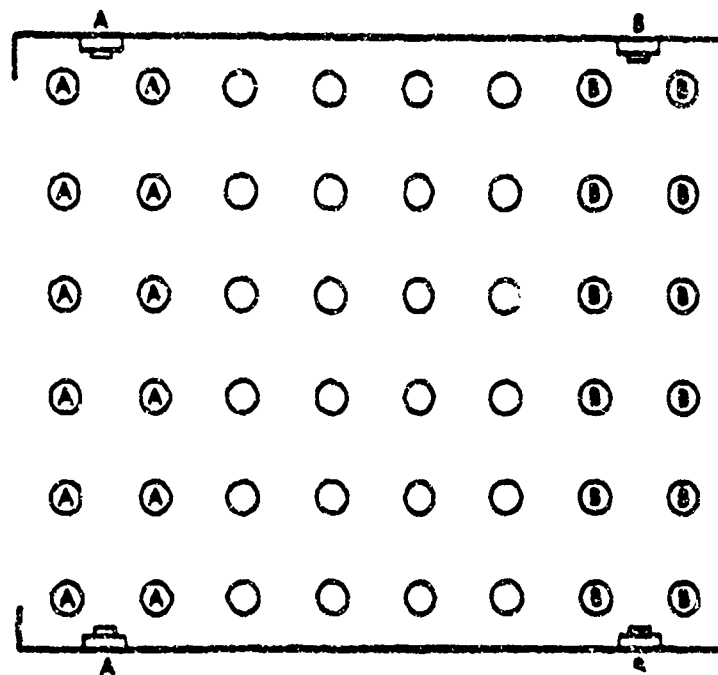
BASELINE DEMAND

ECO DEMAND

| NET ENERGY SAVINGS | NET DEMAND SAVINGS |
|--------------------|--------------------|
| 11,966 MJ/YR | \$817 /YR |
| 10.43 QBTU/YR | \$582 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7152



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| Ⓐ | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page 1

Estimate: Bldg. 7152 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 10.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 12.31 | \$154 | \$340 | \$0 | \$0 | | \$494 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 3.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 6.00 | \$411 | \$165 | \$0 | \$0 | | \$576 |
| 1611350101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | \$82.35 |
| Totals | 0.27 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 8.00 EA | |
| Unit values | 0.30 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 140.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 15.98 | \$129 | \$438 | \$0 | \$0 | | \$568 |
| U13 ELECTRICAL | | 43 | \$2,008 | \$1,187 | \$0 | \$0 | \$3,190 |

20-JUL-94

MeansData for Lotus

Page 2

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| SALES TAX | 5.00% | | \$100 | | | | |
| MATL MARKUP | -30.00% | | (\$602) | | | | |
| LABOR MARKUP | -13.40% | | | (\$158) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,530 |
| CONTINGENCY | 10.00% | | | | | | \$253 |
| BOND | 2.50% | | | | | | \$63 |
| PROFIT | 10.00% | | | | | | \$253 |
| JOB TOTAL | | | | | | | \$3,099 |

20-Jul-94

MeansData for Lotus

Page

3

Estimate: Bldg. 7152 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|--------|
| U16 ELECTRICAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,19 |
| TOTAL | 43 | \$2,002 | \$1,182 | \$0 | \$0 | \$3,19 |
| SALES TAX | 5.00% | \$100 | | | | |
| MATL MARKUP | -30.00% | (\$602) | | | | |
| LABOR MARKUP | -13.40% | | (\$136) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,53 |
| CONTINGENCY | 10.00% | | | | | \$25 |
| BOND | 2.50% | | | | | \$6 |
| PROFIT | 15.00% | | | | | \$25 |
| JOB TOTAL | | | | | | \$3,05 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

19 AUGUST 1984

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7154
AREA: HANGAR BAY

ELECTRIC COSTS:
ENERGY CHARGE \$0.0291 PER KWH
DEMAND CHARGE \$11.78 PER KW

LIGHTING CONTROLLED: 11 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

CURRENT USAGE:
WEEKDAY 8
WEEKEND 5
WEEKS/YR 52
DEMAND (MO/YR) 12

REVERSED USAGE:
WEEKDAY 8
WEEKEND 5
WEEKS/YR 45
DEMAND (MO/YR) 8

BASELINE ENERGY CONSUMPTION 22,873 KWH 19,742 KWH
82,928 MJ 71,073 MJ

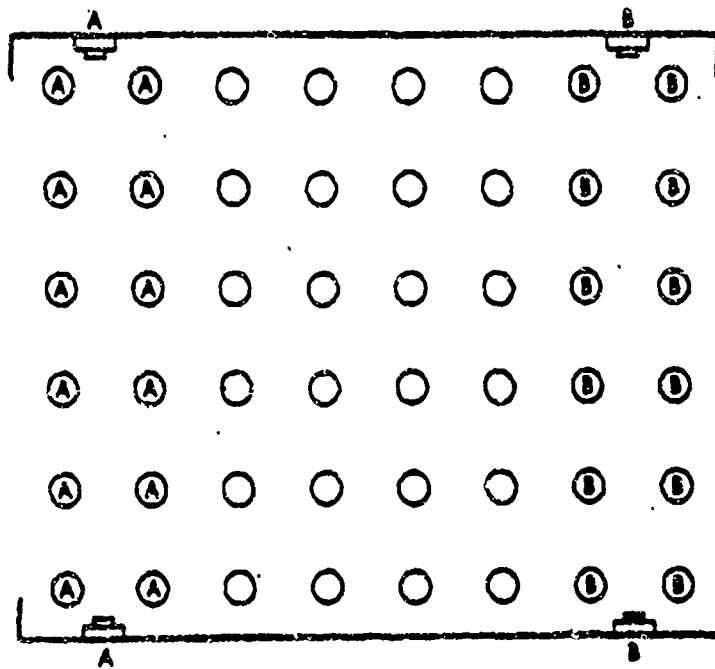
ECO DEMAND

ECO DEMAND

NET ENERGY SAVINGS 11,068 MJ/YR NET DEMAND SAVINGS \$517 /YR
NET ENERGY SAVINGS 10.43 MBTU/YR NET DOLLAR SAVINGS \$582 /YR

PHOTOCELL CONTROL LAYOUT

Building 7154



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Pag

1

Estimate: Bldg. 7154 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 10.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 12.31 | \$254 | \$340 | \$0 | \$0 | | \$494 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 3.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 6.00 | \$411 | \$165 | \$0 | \$0 | | \$576 |
| 1611850101 | PHOTO SWITCH 5C-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 6.00 | 18.35 | 0.00 | 0.00 | | 24.02 |
| Totals | 0.67 | \$0 | \$18 | \$0 | \$0 | | \$18 |
| 1611870102 | SWITCHING REL. | | | | | 8.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 340.00 LF | |
| Unit values | 0.05 | 0.36 | 1.29 | 0.00 | 0.00 | | 1.60 |
| Totals | 15.98 | \$129 | \$439 | \$0 | \$0 | | \$568 |
| U16 ELECTRICAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | | \$3,190 |

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|-------|-----------|---------|-------|
| ESTIMATE TOTAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 | |
| SALES TAX | 5.00% | \$100 | | | | | |
| MATL MARKUP | -36.00% | (\$602) | | | | | |
| LABOR MARKUP | -13.40% | | (\$158) | | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | | |
| SUB MARKUP | 0.00% | | | | \$0 | | |
| TOTAL BEFORE CONTINGENC | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,530 | |
| CONTINGENCY | 10.00% | | | | | \$253 | |
| BOND | 2.50% | | | | | \$63 | |
| PROFIT | 10.00% | | | | | \$253 | |
| JOB TOTAL | | | | | | \$3,099 | |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7154 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| TOTAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| SALES TAX | 5.00% | \$100 | | | | |
| MATL MARKUP | -30.00% | (\$602) | | | | |
| LABOR MARKUP | -13.40% | | (\$158) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,530 |
| CONTINGENCY | 10.00% | | | | | \$253 |
| BOND | 2.50% | | | | | \$63 |
| PROFIT | 10.00% | | | | | \$253 |
| JOB TOTAL | | | | | | \$3,099 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARGE \$0.1211 PER KWH
DEMAND CHARGE \$11.75 PER KW

BUILDING # 7156
AREA HANGAR DAY

LIGHTING CONTROLLED: 11 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

| CURRENT USAGE | REVERSED USAGE |
|-------------------|------------------|
| WEEKDAY 9 | WEEKDAY 9 |
| DAY/WEEK 5 | DAY/WEEK 5 |
| WEEKS/YR 52 | WEEKS/YR 45 |
| DEMAND (KW/YR) 12 | DEMAND (KW/YR) 6 |

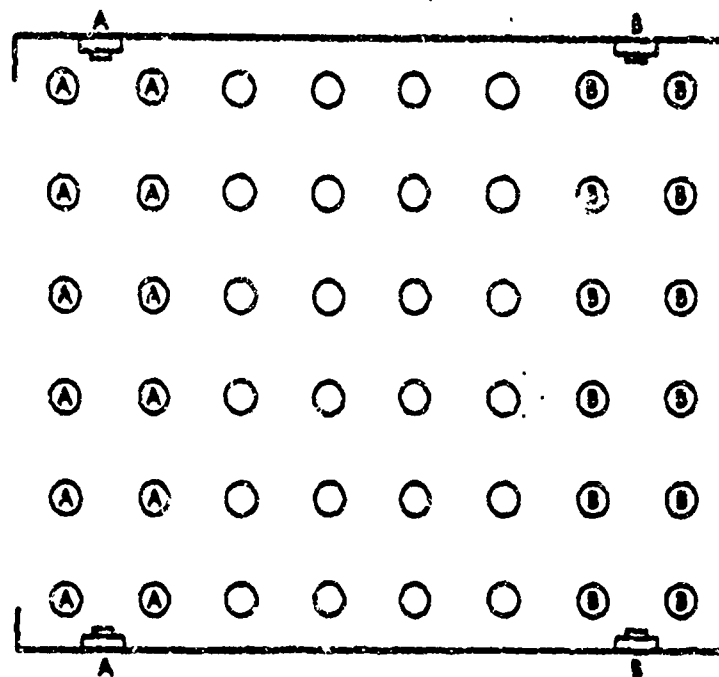
| BASELINE ENERGY CONSUMPTION | 11 KW | ECO ENERGY CONSUMPTION |
|-----------------------------|------------|------------------------|
| 21,000 KWH | 22,210 KWH | 79,957 MJ |
| 22,394 MJ | | 31,834 |

BASELINE DEMAND

| NET ENERGY SAVINGS | 12,438 MJ/YR | NET DEMAND SAVINGS | \$617 /YR |
|--------------------|---------------|--------------------|-----------|
| NET ENERGY SAVINGS | 11.75 MBTU/YR | NET DOLLAR SAVINGS | \$590 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7156



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7156 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 10.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 12.31 | \$154 | \$340 | \$0 | \$0 | | \$494 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 3.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 6.00 | \$411 | \$165 | \$0 | \$0 | | \$576 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,150 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAY | | | | | 8.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 340.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.37 |
| Totals | 15.96 | \$129 | \$439 | \$0 | \$0 | | \$568 |
| U15 ELECTRICAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | | \$3,190 |

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| SALES TAX | 5.00% | | \$100 | | | | |
| MATL MARKUP | -30.00% | | (\$602) | | | | |
| LABOR MARKUP | -13.40% | | | (\$158) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,530 |
| CONTINGENCY | 10.00% | | | | | | \$253 |
| BOND | 2.50% | | | | | | \$63 |
| PROFIT | 10.00% | | | | | | \$252 |
| JOB TOTAL | | | | | | | \$3,099 |

20-Jul-94

MeansData for Lotus

Page 3

Estimate: Bldg. 7156 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| TOTAL | 43 | \$2,008 | \$1,182 | \$0 | \$0 | \$3,190 |
| SALES TAX | 5.00% | \$100 | | | | |
| MATL MARKUP | -30.00% | (\$602) | | | | |
| LABOR MARKUP | -13.40% | | (\$158) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,506 | \$1,024 | \$0 | \$0 | \$2,530 |
| CONTINGENCY | 10.00% | | | | | \$253 |
| BOND | 2.50% | | | | | \$63 |
| PROFIT | 10.00% | | | | | \$253 |
| JOB TOTAL | | | | | | \$3,099 |

PAGE 4-4

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

19 AUGUST 1994

DAYLIGHTING CONTROL IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.72 PER KW

BUILDING #: 7208
AREA: HANGAR BAY

LIGHTING CONTROLLED: 18 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

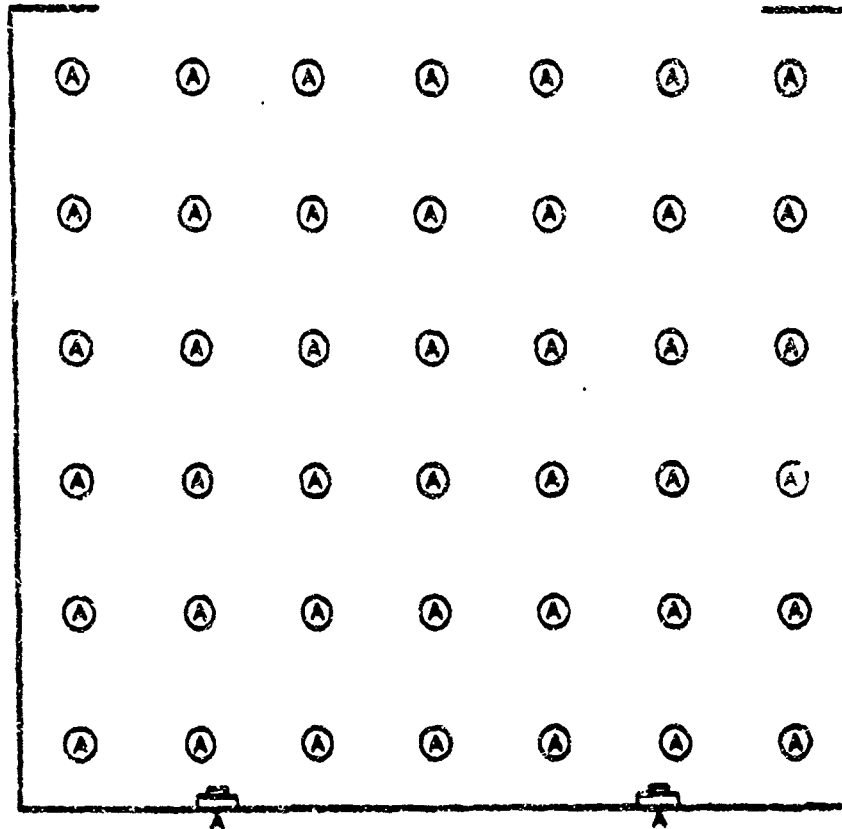
| CURRENT USAGE | | REVERSED USAGE: | |
|----------------|----|-----------------|----|
| WEDAY | W | WEDAY | W |
| DAYWEEK | 5 | DAYWEEK | 5 |
| WEEKS/YR | 52 | WEEKS/YR | 45 |
| DEMAND (MO/YR) | 12 | DEMAND (MO/YR) | 8 |

| BASELINE ENERGY CONSUMPTION | 41,504 KWH | ECO ENERGY CONSUMPTION | 41,187 KWH |
|-----------------------------|------------|------------------------|------------|
| | 179,956 MJ | | 155,471 MJ |
| BASELINE DEMAND | 32,713 | ECO DEMAND | 31,809 |

| NET ENERGY SAVINGS | 24,184 MJ/YR | NET DEMAND SAVINGS | \$904 /YR |
|--------------------|---------------|--------------------|-------------|
| NET ENERGY SAVINGS | 22.92 MBTU/YR | NET DOLLAR SAVINGS | \$1,046 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7206



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

Estimate: Bldg. 7206 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|-------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18 | | | | | 5.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.43 |
| Totals | 6.16 | \$77 | \$170 | \$0 | \$0 | | \$247 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 2.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 4.00 | \$274 | \$110 | \$0 | \$0 | | \$384 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 2.00 EA | |
| Unit values | 1.00 | 290.00 | 27.30 | 0.00 | 0.00 | | 317.30 |
| Totals | 2.00 | \$580 | \$55 | \$0 | \$0 | | \$635 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 4.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 2.00 | \$45 | \$55 | \$0 | \$0 | | \$100 |
| 1611950101 | 1/2" EMT | | | | | 340.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 15.98 | \$129 | \$439 | \$0 | \$0 | | \$568 |
| U16 ELECTRICAL | 1: | \$1,169 | \$247 | \$0 | \$0 | | \$2,016 |

20-Jul-94

MeansData for Lotus

Pa

2

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|--------|
| ESTIMATE TOTAL | | 31 | \$1,189 | \$847 | \$0 | \$0 | \$2,03 |
| SALES TAX | 5.00% | | \$58 | | | | |
| MATL MARKUP | -30.00% | | (\$351) | | | | |
| LABOR MARKUP | -13.40% | | | (\$113) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$877 | \$734 | \$0 | \$0 | \$1,61 |
| CONTINGENCY | 10.00% | | | | | | \$16 |
| BOND | 2.50% | | | | | | \$4 |
| PROFIT | 10.00% | | | | | | \$20 |
| JOB TOTAL | | | | | | | \$1,91 |

20-Jul-94

MeansData for Lotus

F

Estimate: Bldg. 7206 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 31 | \$1,169 | \$847 | \$0 | \$0 | \$2,016 |
| TOTAL | 31 | \$1,169 | \$847 | \$0 | \$0 | \$2,016 |
| SALES TAX | 5.00% | \$58 | | | | |
| MATL MARKUP | -30.00% | (\$351) | | | | |
| LABOR MARKUP | -13.40% | | (\$113) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$877 | \$734 | \$0 | \$0 | \$1,611 |
| CONTINGENCY | 10.00% | | | | | \$161 |
| BOND | 2.50% | | | | | \$40 |
| PROFIT | 10.00% | | | | | \$161 |
| JOB TOTAL | | | | | | \$1,972 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

12 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7208 HANGAR BAY

ELECTRIC COSTS:

ENERGY CHRG \$0.0211 PER KWH
DEMAND CHRG \$11.75 PER KW

LIGHTING CONTROLLED: 44 KW (AFTER ANY PROPOSED RETROFIT(S))
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

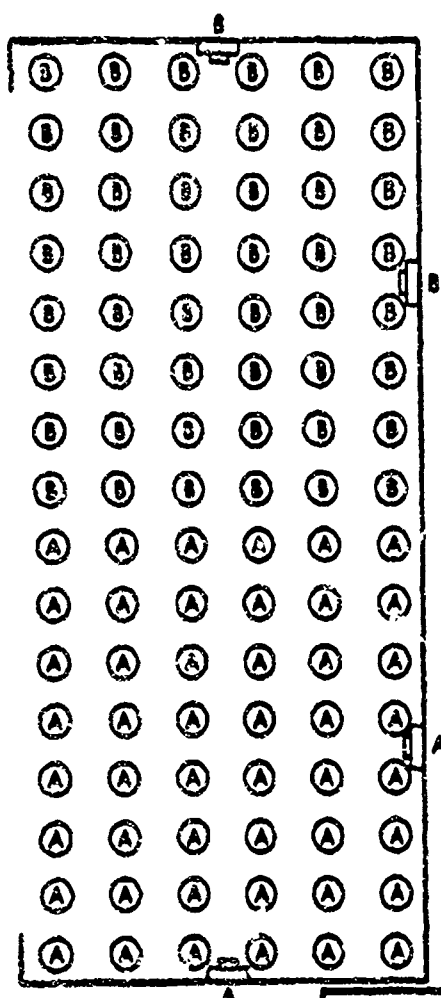
| CURRENT USAGE | REMOVED USAGE |
|----------------|---------------|
| SUNDAY | 10 |
| DAYWEEK | 3 |
| WEEKS/YR | 45 |
| DEMAND (KW/YR) | 8 |

| BASELINE ENERGY CONSUMPTION | 114,774 KWH | 44 KW | 89,360 KWH |
|--|-------------|-------|------------|
| 413,330 MJ <td></td> <td></td> <td>357,898 MJ</td> | | | 357,898 MJ |
| BASELINE DEMAND | 84,342 | | 24,182 |

| NET ENERGY SAVINGS | 54,642 MJ/YR | NET DEMAND SAVINGS | \$2,061 /YR |
|--------------------|----------------|--------------------|-------------|
| NET ENERGY SAVINGS | 52.74 (MMT)/YR | NET DOLLAR SAVINGS | \$2,067 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7208



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7208 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #13-4C | | | | | 14.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 17.23 | \$216 | \$476 | \$0 | \$0 | | \$692 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 6.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 12.00 | \$822 | \$330 | \$0 | \$0 | | \$1,152 |
| 1611850101 | PHOTO SWITCH 50-300 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 8.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 500.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.62 |
| Totals | 23.30 | \$190 | \$645 | \$0 | \$0 | | \$835 |
| U16 ELECTRICAL | | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,231 |

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,231 |
| SALES TAX | 5.00% | | \$127 | | | | |
| MATL MARKUP | -30.00% | | (\$763) | | | | |
| LABOR MARKUP | -13.40% | | | (\$226) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,907 | \$1,463 | \$0 | \$0 | \$3,36 |
| CONTINGENCY | 10.00% | | | | | | \$33 |
| BOND | 2.50% | | | | | | \$8 |
| PROFIT | 10.00% | | | | | | \$33 |
| JOB TOTAL | | | | | | | \$4,12 |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7208 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,231 |
| TOTAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,231 |
| SALES TAX | 5.00% | \$127 | | | | |
| MATL MARKUP | -30.00% | (\$763) | | | | |
| LABOR MARKUP | -13.40% | | (\$226) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,907 | \$1,463 | \$0 | \$0 | \$3,369 |
| CONTINGENCY | 10.00% | | | | | \$337 |
| BOND | 2.50% | | | | | \$84 |
| PROFIT | 10.00% | | | | | \$337 |
| JOB TOTAL | | | | | | \$4,127 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1984

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7210
AREA: HANGAR BAY

ELECTRIC COSTS:
ENERGY CHARG \$0.0291 PER KWH
DEMAND CHARG \$11.73 PER KW

LIGHTING CONTROLLED: 12 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

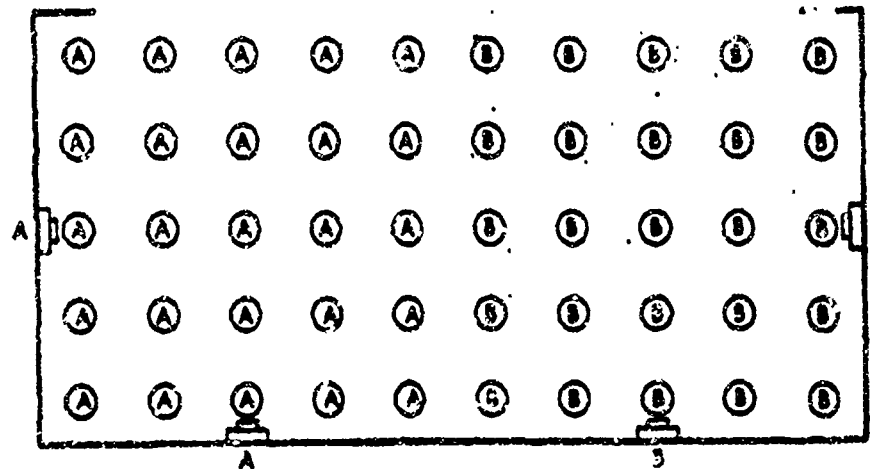
| CURRENT USAGE | | REVISED USAGE: | |
|----------------|----|----------------|----|
| WEEKDAY | 14 | WEEKDAY | 14 |
| WEEKEND | 5 | WEEKEND | 5 |
| DEMAND (MO/YR) | 52 | DEMAND (MO/YR) | 45 |
| | 12 | | 8 |

| | | | |
|------------------------------------|-------------|-------------------------------|-------------|
| BASELINE ENERGY CONSUMPTION | 41,668 KWH | ECO ENERGY CONSUMPTION | 36,225 KWH |
| | 150,699 Btu | | 130,010 Btu |
| BASELINE DEMAND | 31.828 | ECO DEMAND | 31.084 |

| | | | |
|---------------------------|---------------|---------------------------|-----------|
| NET ENERGY SAVINGS | 20,286 KWH | NET DEMAND SAVINGS | \$542 /YR |
| NET ENERGY SAVINGS | 19.23 MBTU/YR | NET DOLLAR SAVINGS | \$681 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7210



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7210 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 10.00 3LF | |
| Unit values | 1.27 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 12.31 | \$154 | \$340 | \$0 | \$0 | | \$494 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 4.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 3.00 | \$548 | \$220 | \$0 | \$0 | | \$768 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | \$2.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 8.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611930101 | 1/2" EMT | | | | | 360.00 LF | |
| Unit values | 0.05 | 0.32 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 16.92 | \$137 | \$464 | \$0 | \$0 | | \$601 |
| U16 ELECTRICAL | | 46 | \$2,153 | \$1,262 | \$0 | \$0 | \$3,415 |

PAGE

| Line # | Description | Marhouze | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|---------|-------|
| ESTIMATE TOTAL | 46 | \$2,153 | \$1,262 | \$0 | \$0 | \$3,415 | |
| SALES TAX | 5.00% | | \$108 | | | | |
| MATL MARKUP | -30.00% | | (\$646) | | | | |
| LABOR MARKUP | -13.40% | | | (\$169) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,613 | \$1,093 | \$0 | \$0 | \$2,706 | |
| CONTINGENCY | 10.00% | | | | | \$271 | |
| BOND | 2.50% | | | | | \$68 | |
| PROFIT | 10.00% | | | | | \$271 | |
| JOB TOTAL | | | | | | \$3,317 | |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7210 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 46 | \$2,153 | \$1,262 | \$0 | \$0 | \$3,415 |
| TOTAL | 46 | \$2,153 | \$1,262 | \$0 | \$0 | \$3,415 |
| SALES TAX | 5.00% | \$108 | | | | |
| MATL MARKUP | -30.00% | (\$646) | | | | |
| LABOR MARKUP | -13.40% | | (\$169) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,615 | \$1,093 | \$0 | \$0 | \$2,708 |
| CONTINGENCY | 10.00% | | | | | \$271 |
| BOND | 2.50% | | | | | \$68 |
| PROFIT | 10.00% | | | | | \$271 |
| JOB TOTAL | | | | | | \$3,317 |

PAGE 4

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND C HARG \$11.76 PER KW

7214
HANGAR BAY

LIGHTING CONTROLLED: 44 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

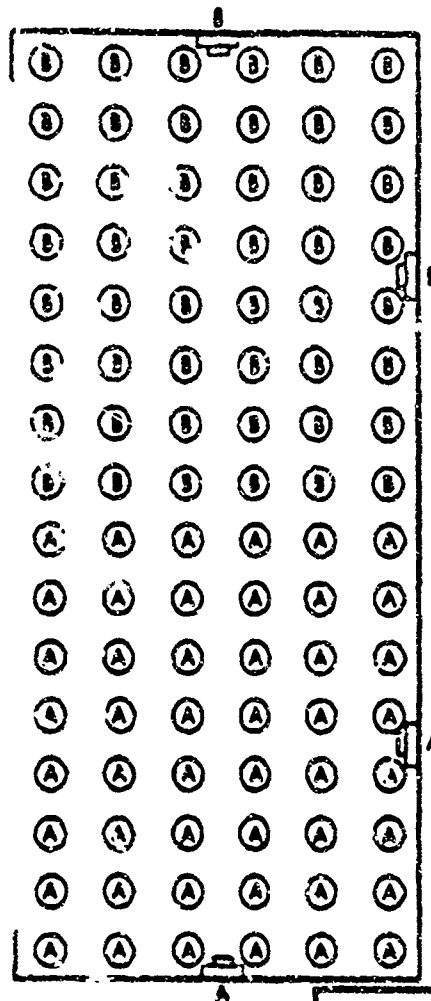
| CURRENT USAGE | | REVERSED USAGE: | |
|----------------|----|-----------------|----|
| WEDAY | 14 | WEDAY | 14 |
| DAYWEEK | 5 | DAYWEEK | 5 |
| WEEKS/YR | 52 | WEEKS/YR | 49 |
| DEMAND (MONTH) | 12 | DEMAND (MONTH) | 2 |

| BASELINE ENERGY CONSUMPTION | 114,722 KWH | ECO ENERGY CONSUMPTION | 139,164 KWH |
|-----------------------------|-------------|------------------------|-------------|
| 574,673 MJ | | 666,776 MJ | |
| BASELINE DEMAND | 35,343 | ECO DEMAND | 84,162 |

| NET ENERGY SAVINGS | 77,898 MJ/YR | NET DEMAND SAVINGS | \$2,981 /YR |
|--------------------|--------------|--------------------|-------------|
| NET ENERGY SAVINGS | 73,635 MJ/YR | NET DOLLAR SAVINGS | \$2,837 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7214



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

1

Estimate: Bldg. 7214 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|-------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 14.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | 49 | |
| Totals | 17.23 | \$216 | \$476 | \$0 | \$0 | \$ | |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 6.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | 197 | |
| Totals | 12.00 | \$822 | \$330 | \$0 | \$0 | \$1, | |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 ZA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | 317 | |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | \$1, | |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | 82 | |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | |
| 1611870102 | SWITCHING RELAYS | | | | | 8.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | 25 | |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | \$ | |
| 1611950101 | 1/2" EMT | | | | | 380.00 LF | |
| Unit values | 0.03 | 0.38 | 1.29 | 0.00 | 0.00 | 1 | |
| Totals | 23.50 | \$190 | \$645 | \$0 | \$0 | \$ | |
| U16 ELECTRICAL | | 82 | \$2,542 | \$1,689 | \$1 | \$0 | \$4, |

20-Jul-94

MeansData for Lotus

ge

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Tot: |
|--------|-------------|----------|------|-------|-----------|-----|------|
|--------|-------------|----------|------|-------|-----------|-----|------|

| | | | | | | | |
|----------------|----|---------|---------|-----|-----|-----|--|
| ESTIMATE TOTAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4 | |
|----------------|----|---------|---------|-----|-----|-----|--|

| | | | | | | | |
|---------------|---------|---------|---------|-----|-----|--|--|
| SALES TAX | 5.00% | \$127 | | | | | |
| MATL MARKUP | -30.00% | (\$763) | | | | | |
| LABOR MARKUP | -13.40% | | (\$226) | | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | | |
| SUB MARKUP | 0.00% | | | | \$0 | | |

| | | | | | | | |
|-------------------------|--------|---------|---------|-----|-----|-----|--|
| TOTAL BEFORE CONTINGENC | | \$1,907 | \$1,463 | \$0 | \$0 | \$3 | |
| CONTINGENCY | 10.00% | | | | | | |
| BOND | 2.50% | | | | | | |
| PROFIT | 10.00% | | | | | | |

| | | | | | | | |
|-----------|--|--|--|--|--|-----|--|
| JOB TOTAL | | | | | | \$4 | |
|-----------|--|--|--|--|--|-----|--|

ge 20-Jul-94 MeansData for Lotus Pe

Estimate: Bldg. 7214 Date: 20 July 1994
Description: Flightline Facility
Project: Lighting Study Bid Data:
Location: Ft. Campbell Job #:
Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|-------|
| U16 ELECTRICAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,2 |
| TOTAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,2 |
| SALES TAX | 5.00% | \$127 | | | | |
| MATL MARKUP | -30.00% | (\$763) | | | | |
| LABOR MARKUP | -13.40% | | (\$226) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,907 | \$1,463 | \$0 | \$0 | \$3,3 |
| CONTINGENCY | 10.00% | | | | | \$3 |
| BOND | 2.50% | | | | | \$ |
| PROFIT | 10.00% | | | | | \$3 |
| JOB TOTAL | | | | | | \$4,1 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHRG \$0.0211 PER KWH
DEMAND CHRG \$15.76 PER KW

ORIGINATING AREA: 7218 HANGAR BAY

IS CONTROLLED: 44 KW (AFTER ANY PROPOSED RETROFITS)
ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE

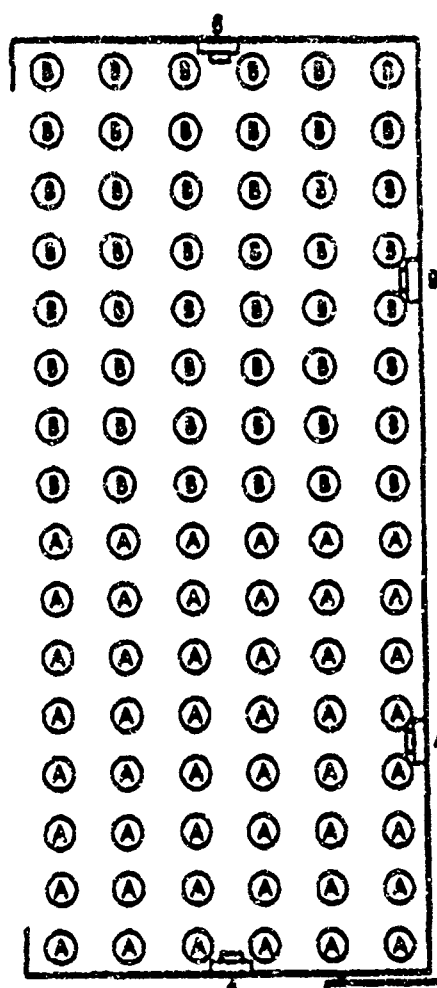
| CURRENT USAGE | | PROPOSED USAGE | |
|----------------|----|----------------|----|
| PER DAY | 14 | PER DAY | 14 |
| DAY/WEEK | 5 | DAY/WEEK | 5 |
| WEEKS/YR | 52 | WEEKS/YR | 45 |
| DEMAND (MO/YR) | 12 | DEMAND (MO/YR) | 8 |

| BASELINE ENERGY CONSUMPTION | | ECO ENERGY CONSUMPTION | |
|-----------------------------|-------------|------------------------|-------------|
| 186,742 KWH | 186,742 KWH | 138,706 KWH | 138,706 KWH |
| 870,673 MJ | 870,673 MJ | 530,774 MJ | 530,774 MJ |
| 94,242 | 94,242 | 84,762 | 84,762 |

| NET ENERGY SAVINGS | | NET DEMAND SAVINGS | |
|--------------------|---------------|--------------------|-------------|
| 77,806 MJ/YR | 77,806 MJ/YR | \$2,861 /YR | \$2,861 /YR |
| 73.83 MWTU/YR | 73.83 MWTU/YR | \$2,537 /YR | \$2,537 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7218



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

30-Jul-94

MeansData for Lotus

Pac

Estimate: Bldg. 7218 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|--------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 14.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.4 |
| Totals | 17.23 | \$216 | \$476 | \$0 | \$0 | | \$69 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 6.00 EA | |
| Unit values | 2.00 | 37.00 | 55.00 | 0.00 | 0.00 | | 192.0 |
| Totals | 12.00 | \$822 | \$330 | \$0 | \$0 | | \$1,15 |
| 1611850101 | PHOTO SWITC., 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.30 | 0.00 | 0.00 | | 317.5 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,27 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.3 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$8 |
| 1611870102 | SWITCHING RELAYS | | | | | 3.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 23.0 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$20 |
| 1611950101 | 1/2" EMT | | | | | 500.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.6 |
| Totals | 23.30 | \$190 | \$645 | \$0 | \$0 | | \$83 |
| U16 ELECTRICAL | | 62 | \$2,542 | \$1,669 | \$0 | \$0 | \$4,21 |

20-Jul-94

MeansData for Lotus

2a

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|--------|
| ESTIMATE TOTAL | | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,23 |
| SALES TAX | 5.00% | | \$127 | | | | |
| MATL MARKUP | -30.00% | | (\$763) | | | | |
| LABOR MARKUP | -13.40% | | | (\$225) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,907 | \$1,463 | \$0 | \$0 | \$3,36 |
| CONTINGENCY | 10.00% | | | | | | \$33 |
| BOND | 2.50% | | | | | | \$8 |
| PROFIT | 10.00% | | | | | | \$33 |
| JOB TOTAL | | | | | | | \$4,12 |

20-Jul-94

MeansData for Lotus

Pa

Estimate: Bldg. 7218 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|--------|
| U16 ELECTRICAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,23 |
| TOTAL | 62 | \$2,542 | \$1,689 | \$0 | \$0 | \$4,23 |
| SALES TAX | 5.00% | \$127 | | | | |
| MATL MARKUP | -30.00% | (\$763) | | | | |
| LABOR MARKUP | -13.40% | | (\$226) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,907 | \$1,463 | \$0 | \$0 | \$3,36 |
| CONTINGENCY | 10.00% | | | | | \$33 |
| BOND | 2.50% | | | | | \$8 |
| PROFIT | 10.00% | | | | | \$33 |
| JOB TOTAL | | | | | | \$4,12 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7243
AREA: INANGAR BAY

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.78 PER KW

LIGHTING CONTROLLED: 26 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

CURRENT USAGE:
WEEKDAY 14
DAYWEEK 5
WEEKS/YR 52
DEMAND (MONTH) 12

REVERSED USAGE:
WEEKDAY 14
DAYWEEK 5
WEEKS/YR 45
DEMAND (MONTH) 8

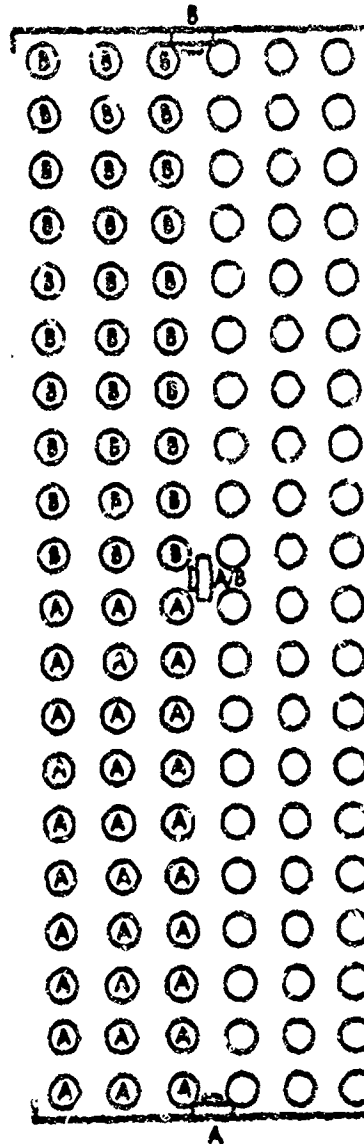
BASELINE ENERGY CONSUMPTION 9,444 KWH
301,678 MJ
BASELINE DEMAND 13.962 KW

ECO ENERGY CONSUMPTION
86,946 KWH
312,984 MJ
ECO DEMAND 12.697 KW

NET ENERGY SAVINGS 46,286 MJ/HR
46.14 HST/HR
NET DEMAND SAVINGS \$1,301 MTR
NET DOLLAR SAVINGS \$1,586 MTR

PHOTOCELL CONTROL LAYOUT

Building 7243



LEGEND

| Symbol | Description |
|--------|---|
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter inside Designates Controlling Photocell |
| Ⓐ | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Pag

Estimate: Bldg. 7243 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 8.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 9.85 | \$123 | \$272 | \$0 | \$0 | | \$395 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 4.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 8.00 | \$548 | \$220 | \$0 | \$0 | | \$768 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 2.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 2.00 | \$580 | \$55 | \$0 | \$0 | | \$635 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 4.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 2.00 | \$45 | \$55 | \$0 | \$0 | | \$100 |
| 1611950101 | 1/2" EMT | | | | | 550.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.62 |
| Totals | 25.85 | \$209 | \$710 | \$0 | \$0 | | \$921 |
| U16 ELECTRICAL | 49 | \$1,569 | \$1,330 | \$0 | \$0 | | \$2,899 |

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20-Jul-94

MeansData for Lotus

Pag

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| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 49 | \$1,569 | \$1,330 | \$0 | \$0 | \$2,899 |
| SALES TAX | 5.00% | | \$79 | | | | |
| MAT'L MARKUP | -30.00% | | (\$471) | | | | |
| LABOR MARKUP | -13.40% | | | (\$178) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,177 | \$1,152 | \$0 | \$0 | \$2,329 |
| CONTINGENCY | 10.00% | | | | | | \$233 |
| BOND | 2.50% | | | | | | \$58 |
| PROFIT | 10.00% | | | | | | \$233 |
| JOB TOTAL | | | | | | | \$2,853 |

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PAGE

20-Jul-94

MeansData for Lotus

Page

3

Estimate: Bldg. 7243 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 49 | \$1,569 | \$1,330 | \$0 | \$0 | \$2,899 |
| TOTAL | 49 | \$1,569 | \$1,330 | \$0 | \$0 | \$2,899 |
| SALES TAX | 5.00% | \$76 | | | | |
| MATL MARKUP | -30.00% | (\$471) | | | | |
| LABOR MARKUP | -13.40% | | (\$178) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,177 | \$1,152 | \$0 | \$0 | \$2,329 |
| CONTINGENCY | 10.00% | | | | | \$233 |
| BOND | 2.50% | | | | | \$58 |
| PROFIT | 10.00% | | | | | \$233 |
| JOB TOTAL | | | | | | \$2,852 |

PAGE 4

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FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.76 PER KW

BUILDING #: 7245
AREA: HANGAR BAY

LIGHTING CONTROLLED: 16 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

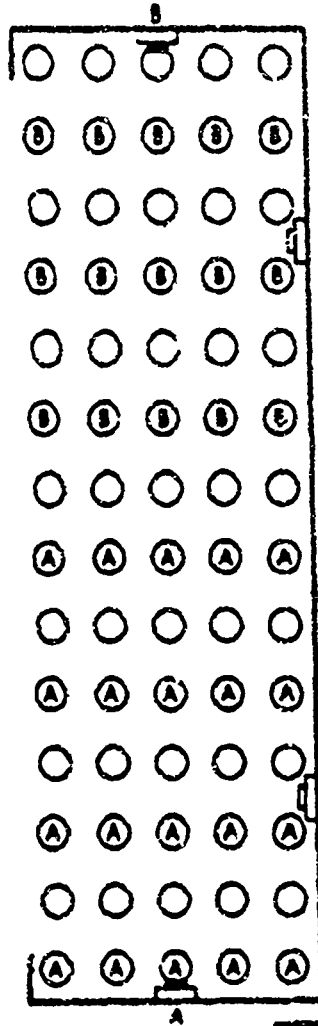
| CURRENT USAGE | | REVISED USAGE: | |
|----------------|----|----------------|----|
| WEEKDAY | 14 | WEEKDAY | 14 |
| WEEKEND | 5 | WEEKEND | 5 |
| WEEKS/YR | 52 | WEEKS/YR | 45 |
| DEMAND (MONTH) | 12 | DEMAND (MONTH) | 8 |

| BASELINE ENERGY CONSUMPTION | 50,644 KWH | ECO ENERGY CONSUMPTION | 30,715 KWH |
|-----------------------------|------------|------------------------|------------|
| BASELINE DEMAND | 218,974 MJ | ECO DEMAND | 182,374 MJ |
| | 22,276 | | 31,517 |

| NET ENERGY SAVINGS | 28,400 MJ/YR | NET DEMAND SAVINGS | \$759 /YR |
|--------------------|---------------|--------------------|-----------|
| NET ENERGY SAVINGS | 26.92 MBTU/YR | NET DOLLAR SAVINGS | \$925 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7245



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Pa

1

Estimate: Bldg. 7245 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|--------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 13.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.4 |
| Totals | 16.00 | \$200 | \$442 | \$0 | \$0 | | \$64 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 5.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.0 |
| Totals | 10.00 | \$685 | \$275 | \$0 | \$0 | | \$96 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.5 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,27 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.3 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$8 |
| 1611870102 | SWITCHING RELAYS | | | | | 2.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.0 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$20 |
| 1611950101 | 1/2" EMT | | | | | 480.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.6 |
| Totals | 22.56 | \$132 | \$619 | \$0 | \$0 | | \$80 |
| U16 ELECTRICAL | | 58 | \$2,391 | \$1,574 | \$0 | \$0 | \$3,96 |

20-Jul-94

MeansData for Lotus

Pag

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| SALES TAX | 5.00% | | \$119 | | | | |
| MATL MARKUP | -10.00% | | (\$714) | | | | |
| LABOR MARKUP | -13.40% | | | (\$211) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,786 | \$1,363 | \$0 | \$0 | \$3,149 |
| CONTINGENCY | 10.00% | | | | | | \$315 |
| BOND | 2.50% | | | | | | \$79 |
| PROFIT | 10.00% | | | | | | \$315 |
| JOB TOTAL | | | | | | | \$3,857 |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7243 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| TOTAL | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| SALES TAX | 5.00% | \$119 | | | | |
| MATL MARKUP | -30.00% | (\$714) | | | | |
| LABOR MARKUP | -13.40% | | (\$211) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,786 | \$1,363 | \$0 | \$0 | \$3,149 |
| CONTINGENCY | 10.00% | | | | | \$315 |
| BOND | 2.50% | | | | | \$79 |
| PROFIT | 10.00% | | | | | \$315 |
| JOB TOTAL | | | | | | \$3,857 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7219
AREA: HANGAR BAY

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.75 PER KW

LIGHTING CONTROLLED: 18 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

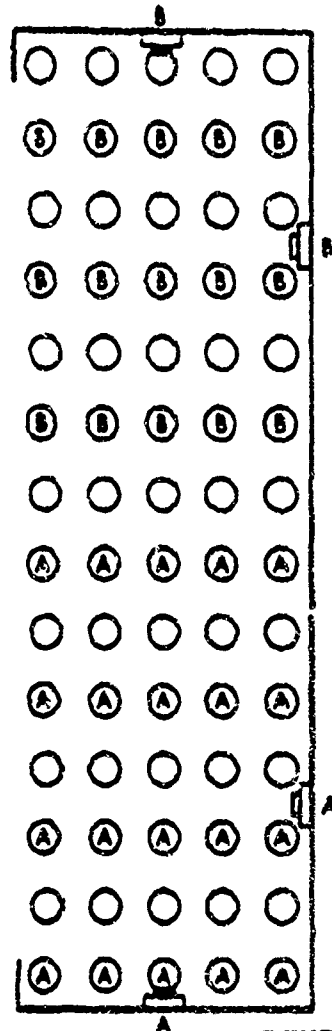
| CURRENT USAGE | | REVISED USAGE: | |
|---------------|----|----------------|----|
| PER DAY | 14 | PER DAY | 14 |
| PER WEEK | 5 | PER WEEK | 5 |
| PER MONTH | 52 | PER MONTH | 43 |
| PER YEAR | 12 | PER YEAR | 8 |

| BASELINE ENERGY CONSUMPTION | 18 KW | ECO ENERGY CONSUMPTION |
|-----------------------------|-------|------------------------|
| 219,274 MJ | | 102,074 MJ |
| 32.7% | | 15.5% |

| NET ENERGY SAVINGS | 28,400 MJ/YR | NET DEMAND SAVINGS | 5755 KWH |
|--------------------|--------------|--------------------|-----------|
| NET ENERGY SAVINGS | 27 MJ/YR | NET DOLLAR SAVINGS | \$823 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7249



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| Ⓐ | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7249 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 13.00 CLF | |
| Unit values | 1.23 | 15.40 | 14.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 16.00 | \$200 | \$442 | \$0 | \$0 | | \$642 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 5.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 10.00 | \$685 | \$275 | \$0 | \$0 | | \$960 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | \$82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 2.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 480.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 22.56 | \$182 | \$619 | \$0 | \$0 | | \$801 |
| 016 ELECTRICAL | | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |

20-Jul-94

MeansData for Lotus

Pag

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| SALES TAX | 5.00% | | \$119 | | | | |
| MATL MARKUP | -30.00% | | (\$714) | | | | |
| LABOR MARKUP | -13.40% | | | (\$211) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,786 | \$1,363 | \$0 | \$0 | \$3,149 |
| CONTINGENCY | 10.00% | | | | | | \$315 |
| BOND | 2.50% | | | | | | \$73 |
| PROFIT | 10.00% | | | | | | \$315 |
| JOB TOTAL | | | | | | | \$3,852 |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7249 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. Footage: City Indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| TOTAL | 58 | \$2,381 | \$1,574 | \$0 | \$0 | \$3,955 |
| SALES TAX | 5.00% | \$119 | | | | |
| WELL MARKUP | -10.00% | (\$714) | | | | |
| LABOR MARKUP | -13.40% | | (\$211) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,786 | \$1,363 | \$0 | \$0 | \$3,149 |
| CONTINGENCY | 10.00% | | | | | \$315 |
| FOND | 2.50% | | | | | \$79 |
| PROFIT | 10.00% | | | | | \$315 |
| JOB TOTAL | | | | | | \$3,857 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING #: 7202
AREA: HANGAR BAY

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.78 PER KW

LIGHTING CONTROLLED: 78 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

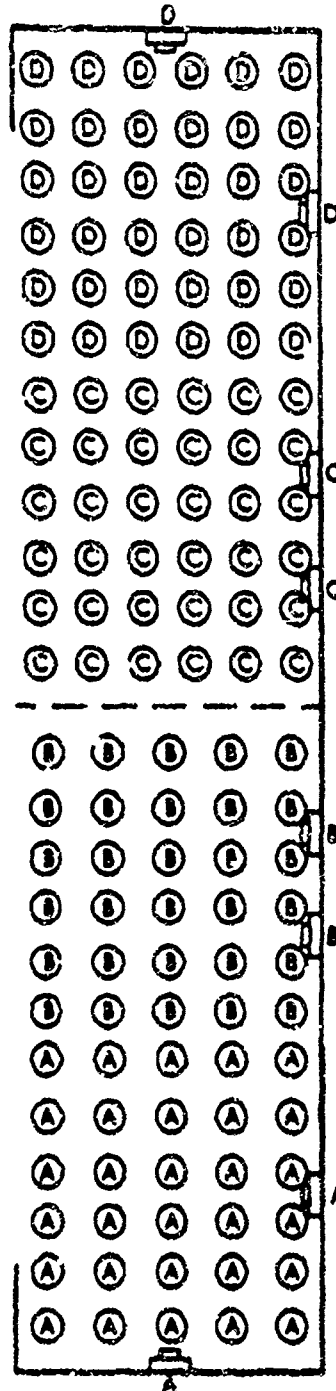
| | |
|-----------------------|-----------------------|
| WEEKDAY USAGE | WEEKEND USAGE |
| MONDAY 10 | MONDAY 10 |
| TUESDAY 5 | TUESDAY 5 |
| WEDNESDAY 5 | WEDNESDAY 5 |
| THURSDAY 5 | THURSDAY 5 |
| FRIDAY 5 | FRIDAY 5 |
| SATURDAY 5 | SATURDAY 5 |
| SUNDAY 5 | SUNDAY 5 |
| DEMAND (KW/YR) | DEMAND (KW/YR) |
| 12 | 6 |

| | |
|------------------------------------|-------------------------------|
| BASELINE ENERGY CONSUMPTION | ECO ENERGY CONSUMPTION |
| 302,178 KWH | 174,960 KWH |
| 727,836 MJ | 610,856 MJ |
| BASELINE DEMAND | ECO DEMAND |
| 818 MW | 37,328 MW |

| | |
|---------------------------|---------------------------|
| NET ENERGY SAVINGS | NET DEMAND SAVINGS |
| 97,978 MJ/YR | \$3,664 /YR |
| NET ENERGY SAVINGS | NET DEMAND SAVINGS |
| 93.83 MDT/YR | \$4,236 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7262



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| ☐ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page :

Estimate: Bldg. 7262 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #12-4C | | | | | 25.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 30.78 | \$325 | \$850 | \$0 | \$0 | | \$1,235 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 8.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 16.00 | \$1,096 | \$440 | \$0 | \$0 | | \$1,536 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 8.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 8.00 | \$2,320 | \$220 | \$0 | \$0 | | \$2,540 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.15 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 16.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 8.00 | \$181 | \$220 | \$0 | \$0 | | \$401 |
| 1611950101 | 1/2" EMT | | | | | 750.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 35.25 | \$285 | \$968 | \$0 | \$0 | | \$1,253 |
| U16 ELECTRICAL | 99 | \$4,331 | \$2,716 | \$0 | \$0 | | \$7,047 |

20-Jul-94

MeansData for Lotus

Page :

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|-----------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | 99 | | \$4,331 | \$2,716 | \$0 | \$0 | \$7,047 |
| SALES TAX | 5.00% | | \$217 | | | | |
| MATL MARKUP | -30.00% | | (\$1,259) | | | | |
| LABOR MARKUP | 13.40% | | | (\$364) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$3,248 | \$2,352 | \$0 | \$0 | \$5,600 |
| CONTINGENCY | 10.00% | | | | | | \$560 |
| BOND | 2.50% | | | | | | \$140 |
| PROFIT | 10.00% | | | | | | \$560 |
| JOB TOTAL | | | | | | | \$6,860 |

20-Jul-94

MeansData for Lotus

Page

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=====
Estimate:      Bldg. 7262      Date:      20 July 1994
Description:    Flightline Facility
Project:        Lighting Study  Bid Date:
Location:       Ft. Campbell   Job #:
Sq. footage:    City Indx:
=====

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SUMMARY

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=====
Manhours  Matl  Labor  Equipment  Sub  Total
=====
U16 ELECTRICAL      99    $4,331    $2,716        $0        $0    $7,047
TOTAL                99    $4,331    $2,716        $0        $0    $7,047

SALES TAX           3.00%      $217
MATL MARKUP        -30.00%    ($1,299)
LABOR MARKUP       -13.40%      ($364)
EQUIPT MARKUP       0.00%
SUB MARKUP          0.00%

TOTAL BEFORE CONTINGENC  $3,248    $2,352        $0        $0    $5,600
CONTINGENCY           10.00%      $560
BOND                   2.50%      $140
PROFIT                 10.00%      $560

JOB TOTAL                                     $6,860
=====

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FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.75 PER KW

BUILDING # 7264
AREA: HANGAR BAY

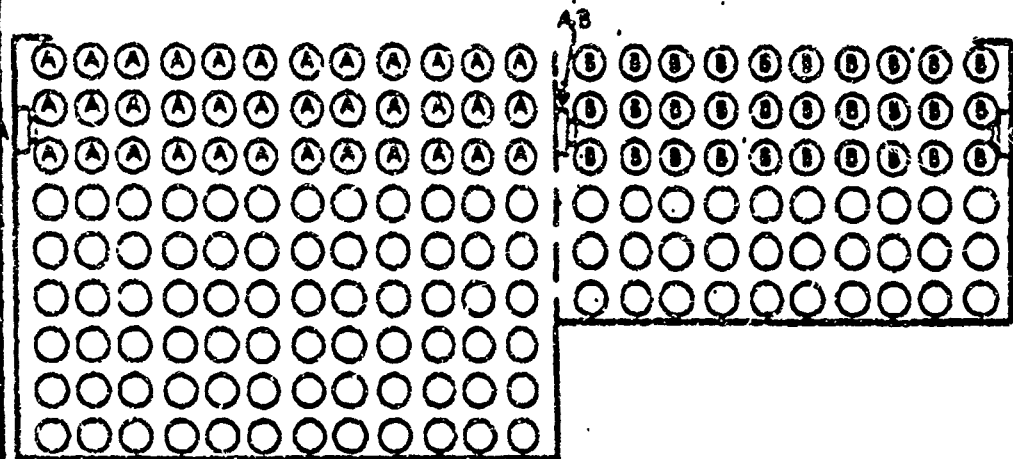
LIGHTING CONTROLLED: 71 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

| CURRENT USAGE | | REVERSED USAGE: | |
|-----------------------------|----|------------------------|----|
| PER DAY | 10 | PER DAY | 10 |
| PER WEEK | 5 | PER WEEK | 5 |
| PER MONTH | 52 | PER MONTH | 45 |
| PER YEAR | 12 | PER YEAR | 6 |
| BASELINE ENERGY CONSUMPTION | | ECO ENERGY CONSUMPTION | |
| 185,328 KWH | | 108,300 KWH | |
| 607,191 MJ | | 377,359 MJ | |
| BASELINE DEMAND | | ECO DEMAND | |
| 10,876 | | 8,777 | |

| | | | |
|--------------------|--------------|--------------------|-------------|
| NET ENERGY SAVINGS | 77,028 MJ/YR | NET DEMAND SAVINGS | \$3,359 /YR |
| NET ENERGY SAVINGS | 83 MJ/TU/YR | NET DOLLAR SAVINGS | \$3,885 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7264



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| ⊙ | Light; Letter Inside Designates Controlling Photocell |
| ⊙ A | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

1

Estimate: Bldg. 7264 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City index:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|---------|-----------|-----------|--------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 12.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.4 |
| Totals | 14.77 | \$185 | \$408 | \$0 | \$0 | | \$59 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 4.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.0 |
| Totals | 8.00 | \$548 | \$220 | \$0 | \$0 | | \$76 |
| 1611850101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 3.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.5 |
| Totals | 3.00 | \$870 | \$83 | \$0 | \$0 | | \$95 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.3 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$8 |
| 1611870102 | SWITCHING RELAYS | | | | | 6.00 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.0 |
| Totals | 3.00 | \$68 | \$83 | \$0 | \$0 | | \$15 |
| 1611950101 | 1/2" EMT | | | | | 600.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.6 |
| Totals | 28.20 | \$228 | \$774 | \$0 | \$0 | | \$1,00 |
| U16 ELECTRICAL | | 58 | \$1,963 | \$1,586 | \$0 | \$0 | \$3,54 |

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 58 | \$1,963 | \$1,586 | \$0 | \$0 | \$3,549 |
| SALES TAX | 5.00% | | \$98 | | | | |
| MATL MARKUP | -10.00% | | (\$289) | | | | |
| LABOR MARKUP | -13.40% | | | (\$213) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,472 | \$1,373 | \$0 | \$0 | \$2,845 |
| CONTINGENCY | 10.00% | | | | | | \$284 |
| BOND | 2.50% | | | | | | \$71 |
| PROFIT | 10.00% | | | | | | \$284 |
| JOB TOTAL | | | | | | | \$3,480 |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7264 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| UIC ELECTRICAL | 58 | \$1,963 | \$1,586 | \$0 | \$0 | \$3,549 |
| TOTAL | 58 | \$1,963 | \$1,586 | \$0 | \$0 | \$3,549 |
| SALES TAX | 5.00% | \$98 | | | | |
| MATL MARKUP | -30.00% | (\$589) | | | | |
| LABOR MARKUP | -13.40% | | (\$213) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,472 | \$1,373 | \$0 | \$0 | \$2,846 |
| CONTINGENCY | 10.00% | | | | | \$285 |
| BOND | 2.50% | | | | | \$71 |
| PROFIT | 10.00% | | | | | \$285 |
| JOB TOTAL | | | | | | \$3,486 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS
19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.78 PER KW

BUILDING #: 7208
AREA: HANGAR BAY

LIGHTING CONTROLLED: 30 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

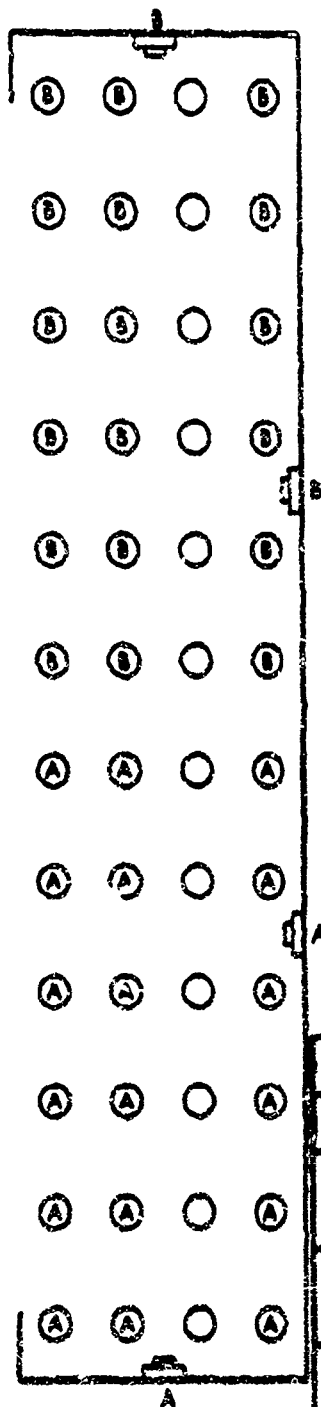
| | |
|----------------------|------------------------|
| CURRENT USAGE | REVERSED USAGE: |
| WEDDAY 10 | WEDDAY 10 |
| DAY/WEEK 5 | DAY/WEEK 5 |
| WEEKS/YR 52 | WEEKS/YR 45 |
| DEMAND (MO/YR) 12 | DEMAND (MO/YR) 8 |

| | |
|-------------------------------------|-------------------------------|
| BASISLINE ENERGY CONSUMPTION | ECO ENERGY CONSUMPTION |
| 101,008 KWH | 87,498 KWH |
| 303,217 MJ | 394,928 MJ |
| \$5,096 | \$2,664 |

| | | | |
|---------------------------|---------------------------|---------------------------|---------------------------|
| NET ENERGY SAVINGS | NET DEMAND SAVINGS | NET ENERGY SAVINGS | NET DEMAND SAVINGS |
| 48,988 MJ/YR | \$1,832 /YR | 48,988 MJ/YR | \$1,832 /YR |
| 46.43 MBL/YR | \$2,119 /YR | 46.43 MBL/YR | \$2,119 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7268



| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| Ⓐ | Photocell; Letter Designates which Photocell |

20-Jul-94

MeansData for Lotus

Page

Estimate: Bldg. 7268 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1511350023 | LOW VOLTAGE WIRE #18-4C | | | | | 10.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 12.31 | \$154 | \$340 | \$0 | \$0 | | \$494 |
| 1511750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 3.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 6.00 | \$411 | \$165 | \$0 | \$0 | | \$576 |
| 1611350101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,150 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 EA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | \$2.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 8.50 EA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611930101 | 1/2" EMT | | | | | 375.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 17.63 | \$143 | \$484 | \$0 | \$0 | | \$627 |
| U16 ELECTRICAL | 45 | \$2,022 | \$1,227 | \$0 | \$0 | | \$3,249 |

PAGE 4

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 45 | \$2,029 | \$1,227 | \$0 | \$0 | \$3,249 |
| SALES TAX | 3.00% | | \$101 | | | | |
| MATL MARKUP | -30.00% | | (\$607) | | | | |
| LABOR MARKUP | -33.40% | | | (\$164) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,517 | \$1,063 | \$0 | \$0 | \$2,579 |
| CONTINGENCY | 10.00% | | | | | | \$258 |
| BOND | 2.50% | | | | | | \$64 |
| PROFIT | 10.00% | | | | | | \$258 |
| JOB TOTAL | | | | | | | \$3,159 |

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20-Jul-84

MeansData for Lotus

Page

Estimate: Blq. 7268 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|---------|
| U16 ELECTRICAL | 45 | \$2,022 | \$1,227 | \$0 | \$0 | \$3,249 |
| TOTAL | 45 | \$2,022 | \$1,227 | \$0 | \$0 | \$3,249 |
| SALES TAX | 5.00% | \$101 | | | | |
| MATL MARKUP | -30.00% | (\$607) | | | | |
| LABOR MARKUP | -13.40% | | (\$164) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,517 | \$1,063 | \$0 | \$0 | \$2,579 |
| CONTINGENCY | 10.00% | | | | | \$258 |
| BOND | 2.50% | | | | | \$64 |
| PROFIT | 10.00% | | | | | \$258 |
| JOB TOTAL | | | | | | \$3,159 |

FORT CAMPBELL LIGHTING SURVEY

ECO 2: LIGHTING CONTROLS

19 AUGUST 1994

DAYLIGHTING CONTROLS IN HIGH BAY AREAS

BUILDING & AREA: 7272 HANGAR BAY

ELECTRIC COSTS:
ENERGY CHARG \$0.0211 PER KWH
DEMAND CHARG \$11.73 PER KW

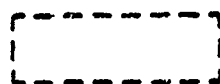
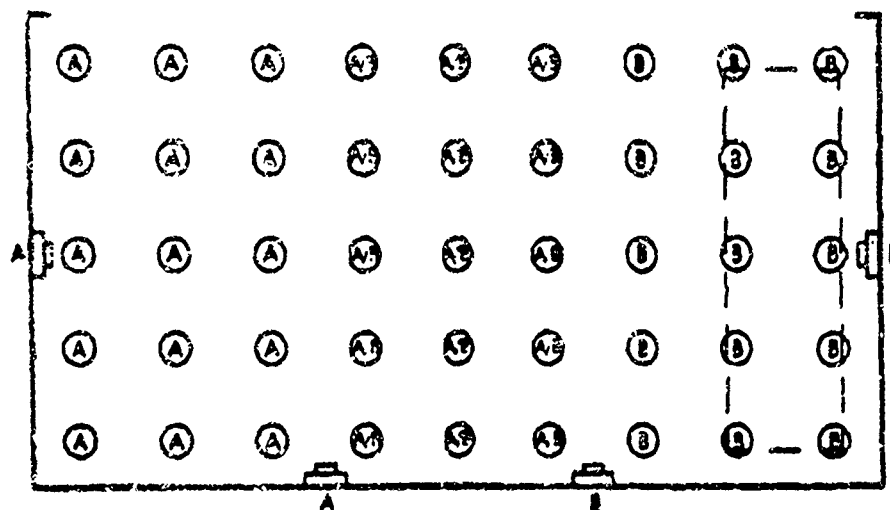
LIGHTING CONTROLLED: 29 KW (AFTER ANY PROPOSED RETROFITS)
(SEE ATTACHED SKETCH FOR DESCRIPTION OF CONTROL SEQUENCE)

| CURRENT USAGE | | REVERSED USAGE | |
|-----------------------------|----|------------------------|----|
| WEEKDAY | 10 | WEEKDAY | 10 |
| WEEKEND | 5 | WEEKEND | 5 |
| WEEKS/YR | 52 | WEEKS/YR | 52 |
| DEMAND (MO/YR) | 12 | DEMAND (MO/YR) | 12 |
| BASELINE ENERGY CONSUMPTION | | ECO ENERGY CONSUMPTION | |
| 73,916 KWH | | 65,610 KWH | |
| 372,829 MJ | | 236,196 MJ | |
| 54,122 | | 82,746 | |
| BASELINE DEMAND | | ECO DEMAND | |

| | | | |
|--------------------|----------------|--------------------|-------------|
| NET ENERGY SAVINGS | 36,742 MJ/YR | NET DEMAND SAVINGS | \$1,374 /YR |
| NET ENERGY SAVINGS | \$4,852 MBT/YR | NET DOLLAR SAVINGS | \$1,589 /YR |

PHOTOCELL CONTROL LAYOUT

Building 7272



Indicates Office Area Enclosed
Below HID Fixtures.

| LEGEND | |
|--------|---|
| Symbol | Description |
| ○ | Light; Controlled by Manual Switch Only |
| Ⓐ | Light; Letter Inside Designates Controlling Photocell |
| Ⓐ | Photocell; Letter Designates which Photocell |

Estimate: Bldg. 7272 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City indx:

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|--|----------|---------|-------|-----------|-----------|---------|
| 1611350023 | LOW VOLTAGE WIRE #18-4C | | | | | 14.00 CLF | |
| Unit values | 1.23 | 15.40 | 34.00 | 0.00 | 0.00 | | 49.40 |
| Totals | 17.23 | \$216 | \$476 | \$0 | \$0 | | \$692 |
| 1611750101 | LIGHTING CONTACTOR
600 V, 20 A, 3 POLES | | | | | 3.00 EA | |
| Unit values | 2.00 | 137.00 | 55.00 | 0.00 | 0.00 | | 192.00 |
| Totals | 6.00 | \$411 | \$165 | \$0 | \$0 | | \$576 |
| 1611650101 | PHOTO SWITCH 50-500 FC ADJUSTABLE | | | | | 4.00 EA | |
| Unit values | 1.00 | 290.00 | 27.50 | 0.00 | 0.00 | | 317.50 |
| Totals | 4.00 | \$1,160 | \$110 | \$0 | \$0 | | \$1,270 |
| 1611870101 | LOW VOLTAGE TRANS 115V-24V | | | | | 1.00 ZA | |
| Unit values | 0.67 | 64.00 | 18.35 | 0.00 | 0.00 | | 82.35 |
| Totals | 0.67 | \$64 | \$18 | \$0 | \$0 | | \$82 |
| 1611870102 | SWITCHING RELAYS | | | | | 8.00 ZA | |
| Unit values | 0.50 | 11.30 | 13.75 | 0.00 | 0.00 | | 25.05 |
| Totals | 4.00 | \$90 | \$110 | \$0 | \$0 | | \$200 |
| 1611950101 | 1/2" EMT | | | | | 500.00 LF | |
| Unit values | 0.05 | 0.38 | 1.29 | 0.00 | 0.00 | | 1.67 |
| Totals | 23.50 | \$192 | \$643 | \$0 | \$0 | | \$835 |
| U16 ELECTRICAL | 56 | \$2,131 | \$1,524 | \$0 | \$0 | | \$3,655 |

20-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|---------|---------|-----------|-----|---------|
| ESTIMATE TOTAL | | 56 | \$2,131 | \$1,524 | \$0 | \$0 | \$3,655 |
| SALES TAX | 5.00% | | \$107 | | | | |
| MATL MARKUP | -30.00% | | (\$639) | | | | |
| LABOR MARKUP | -13.40% | | | (\$204) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$1,598 | \$1,320 | \$0 | \$0 | \$2,918 |
| CONTINGENCY | 10.00% | | | | | | \$292 |
| BOND | 2.50% | | | | | | \$73 |
| PROFIT | 10.00% | | | | | | \$292 |
| JOB TOTAL | | | | | | | \$3,575 |

20-Jul-94

MeansData for Lotus

2

Estimate: Bldg. 7272 Date: 20 July 1994
 Description: Flightline Facility
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|---------|---------|-----------|-----|-------|
| U16 ELECTRICAL | 56 | \$2,131 | \$1,524 | \$0 | \$0 | \$3,6 |
| TOTAL | 56 | \$2,131 | \$1,524 | \$0 | \$0 | \$3,6 |
| SALES TAX | 5.00% | \$107 | | | | |
| MATL MARKUP | -13.00% | (\$639) | | | | |
| LABOR MARKUP | -13.40% | | (\$204) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$1,592 | \$1,320 | \$0 | \$0 | \$2,9 |
| CONTINGENCY | 10.00% | | | | | \$2 |
| BOND | 2.50% | | | | | \$1 |
| PROFIT | 10.00% | | | | | \$2 |
| JOB TOTAL | | | | | | \$3,8 |

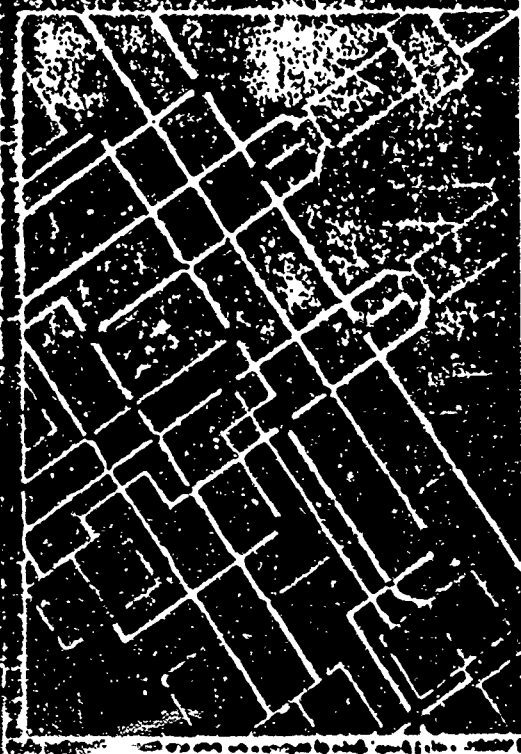
PACI

102



Remote Control Low Voltage Switching

Components
and Applications



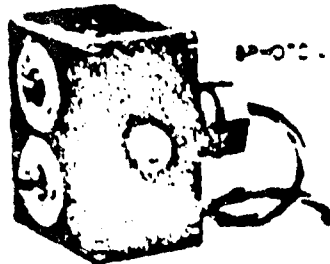
GENERAL  ELECTRIC

Photo Switches

BP PHOTO-4 This unit is used to shed artificial lighting in interior spaces. It monitors outside light levels through a perimeter window or skylight to provide the switching signal to the input of a Master Sequencer or Telephone Override. The

photo switch will turn loads OFF when the exterior light level reaches the setpoint and level and remains there for 15 minutes. When the light level decreases to approximately 15% less than this setting and remains there for 15 minutes, loads will be turned ON. (See the wiring diagram on page 25.)

BP PHOTO-5 This unit is designed to shed exterior lighting



Specifications

| | |
|----------------------------|--|
| Catalog Number | BP PHOTO-4 (indoor use only)
BP PHOTO-5 (indoor and outdoor use) |
| Load Capacity Range | BP PHOTO-4 50 500 W adjustable
BP PHOTO-5 5-100 W fixed |
| Power Requirement | No external source needed |
| Environment | 18 to 55°C (0 to 131°F)
non-corrosive atmosphere
0-85% RH non-corrosive (BP PHOTO-4)
0-100% RH (BP PHOTO-5) |
| RF Environment | Less than 12 V/m |
| Immediate Response Feature | BP PHOTO-4 - Yes
BP PHOTO-5 - No |
| Hysteresis | 15% (to 100°C)
20% (to 300°C)
25% (to 500°C) |

5 PROJECT III: INTERIOR LIGHTING AND CONTROLS AT BLANCHFIELD HOSPITAL

FY04 EEAP LIGHTING ENERGY STUDY, Ft. Campbell, KY

This section contains the Project Development Brochures and the DD 1391 Forms for Project III Interior Lighting and Controls at Blanchfield Hospital. Following the DD 1391 Forms is a project summary table, the life cycle cost analysis for the total project, and the life cycle cost analysis, calculations, and cost estimate for the interior lighting and for the controls. The interior lighting replacements include T8 fluorescent fixtures with electronic ballasts (with and without reflectors), and compact fluorescents. The controls portion of the project involves the installation of occupancy sensors in doctors' offices and exam rooms in Building C. Below is a detailed index of the information included in this section.

| | |
|---|------|
| PDBs | 5-2 |
| DD 1391 Forms | 5-18 |
| Table S.1 Project Summary - Hospital Interior Lighting and Controls | 5-26 |
| Project LCCA | 5-27 |
| LCCA for Interior Lighting - Buildings B & C | 5-28 |
| Calculations and Cost Estimates - Interior Lighting - Buildings B & C | 5-29 |
| LCCA for Lighting Controls - Building C - Doctor and Exam Rooms | 5-40 |
| Calculations and Cost Estimates - Lighting Controls - Building C | 5-41 |
| Catalog Cut Sheets | 5-45 |

facility

INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFIELD HOSPITAL
Fort Campbell, Kentucky

project coordinator for using service

Arlin Wright

functional requirements summary, PDB-1

5-2

DA FORM 8020-T-1, Feb 82

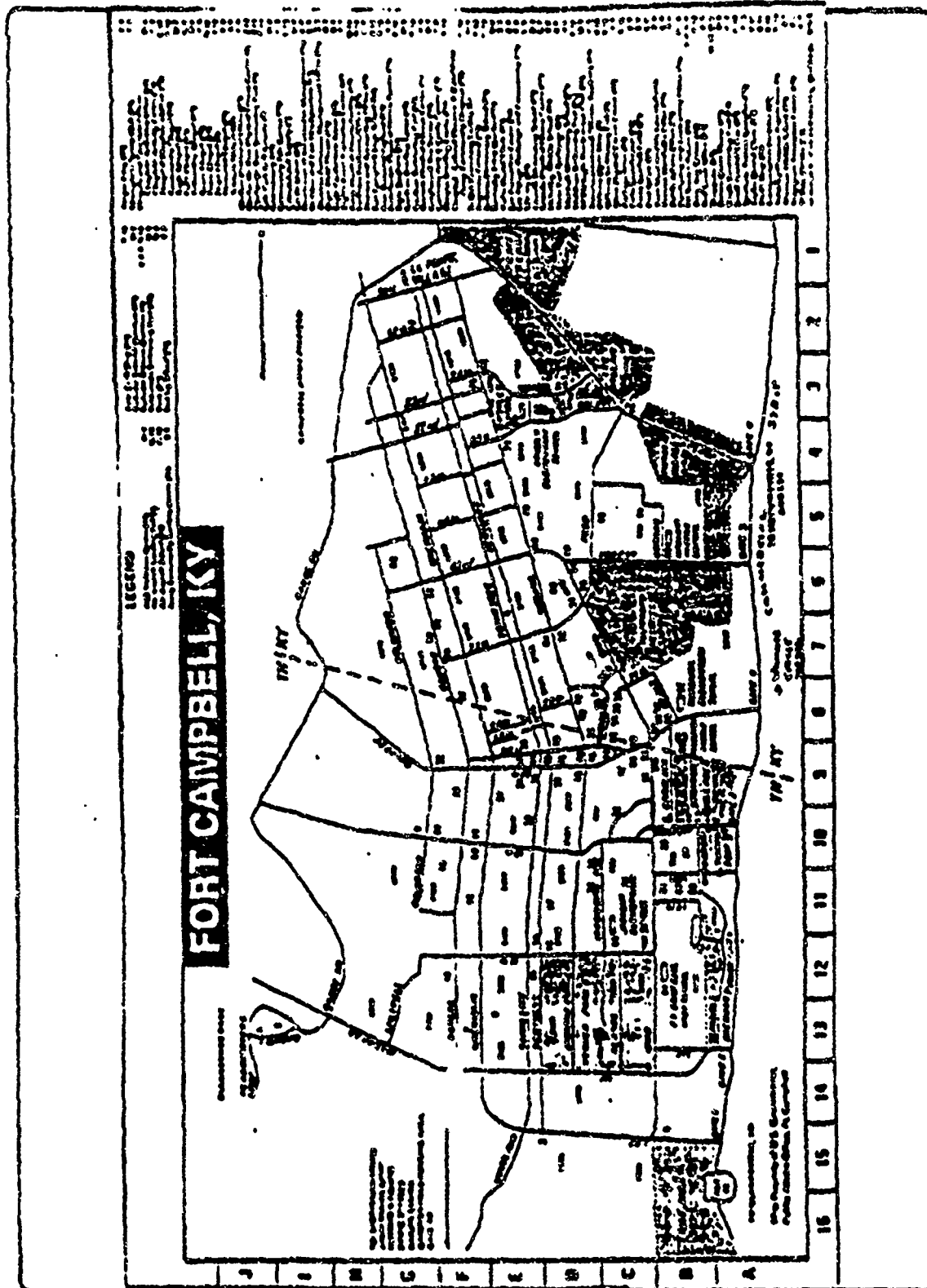
TM 5-000-3 A-1

OBJECTIVE:

The objective of this project is to replace existing interior lighting with high efficiency fixtures and lamps and install occupancy sensors at Blanchfield Hospital. The replacement of the existing lighting and installation of occupancy sensors will reduce energy consumption and life cycle operating costs for the hospital in accordance with the Army Energy Resources Management Plan (ERMP), and Executive Order 12759.

functional requirements summary, PDB-1

5-3



facilities requirements sketch, PDB- 1/2

5-4

TN 5-42-5

**APPENDIX C
DOCUMENTATION CHECKLIST**

6-1
5-5

A. SPECIAL CONSIDERATIONS

1753.

- A-1 Cost estimates for each primary and supporting activity
- A-2 Performance metrics and indicators for each activity with USACC and authorization for exceptions
- A-3 Coordination with state and local governments, universities, foreign military, foreign law enforcement and intelligence agencies, emergency response agencies, etc.
- A-4 Assignment of employees
- A-5 Economic analysis of alternatives
- A-6 Activity risk rating
- A-7 Verification of cost of personnel (BOP) coordination with U.S. European command and NATO - current cost estimates and comparable inflation rate of exchange used in estimates
- A-8 Impact on historic structures, etc. by the estimated construction and coordination with state historic preservation office, etc. by federal historic preservation
- A-9 Expenditure by establishment phase
- A-10 Coordination with various state, federal, private, non-profit, etc.
- A-11 Coordination of related activities, projects, etc. for the project can be coordinated
- A-12 Resource coordination etc.

1. See Above. x A

| Page No. | Page No. | Page No. | Page No. |
|----------|----------|----------|----------|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 |
| 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 |
| 45 | 46 | 47 | 48 |
| 49 | 50 | 51 | 52 |
| 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 |
| 65 | 66 | 67 | 68 |
| 69 | 70 | 71 | 72 |
| 73 | 74 | 75 | 76 |
| 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 |
| 85 | 86 | 87 | 88 |
| 89 | 90 | 91 | 92 |
| 93 | 94 | 95 | 96 |
| 97 | 98 | 99 | 100 |

[illegible]

TO BE DISSEMINATED - Information received but not currently available.
 This copy of information denied

20190827 17:42:00 - Received from [redacted] at [redacted]
and please.

~~SECURITY AGENCY - Special Agent in Charge is now receiving~~
~~information from the FBI.~~

* BY WFOZ-16 (CROSS) AND WFOZ-16 (CROSS) 151901

- A - JPA
- B - Vague Security
- C - Computer or Security
- D - Program
- E - Other (Other Computer Access and
Security)

documentation checklist

5-6

B. SITE DEVELOPMENT

| ITEM | | Required or Not Required | To Be Determined | Comments Attached | Document Attached |
|---|---|--------------------------|------------------|-------------------|-------------------|
| B-1 | Consultation with the Design Office to determine and evaluate firing point hazards | NC | | | |
| B-2 | Preparation, submission, and/or approval of new | | | | |
| (A) | General Site Plan | NR | | | |
| (B) | Annotated General Site Plan | NR | | | |
| (C) | Sketch Site Plan | NR | | | |
| (D) | Facilities Requirements Sketch | R | | | |
| B-3 | Preparation of | | | | |
| (A) | Site Survey | NR | | | |
| (B) | Subject Information | NR | | | |
| B-4 | Approval by Department of Defense Explosive Safety Board (DDESB) for Safety Site Plan | NR | | | |
| Other Site Development Considerations (List and Number Items) | | | | | |
| 1. See Project Development Brochure, PCB-1/2 | | | | | |

REQUIRED OR NOT REQUIRED - has requirement or no information is known. Enter "R" if item is required and is required for this project. Enter "NR" if item is not required and is not required for this project.

TO BE DETERMINED - information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summary for or attached and attached.

DOCUMENT ATTACHED - Significant information is in or attached and attached.

KEY SYMBOLS (Codes and Markers) (See Table 1)

A - Draft
 B - Using Service
 C - Construction Service
 D - Not Used
 E - Other (Check Comments Attached and Attached)

documentation checklist

5-7

DA FORM 5023-B-R, Feb 82

T31 5-500-3 5-7

C. ARCHITECTURAL & STRUCTURAL

| ITEM | | Required or Not Required | By Whom | Comment Attached | Document Attached |
|--|---|--------------------------|---------|------------------|-------------------|
| C-1 | Recognition with troop moving programs and requirements | NR | | | |
| C-2 | Evaluation of existing facilities including degree of utilization | R | E | | |
| C-3 | Advice to remove and relocation of existing obsolete facilities | NR | | | |
| C-4 | Evaluation of attached community facilities | NR | | | |
| C-5 | Storage and maintenance facilities including nuclear weapons | NR | | | |
| C-6 | Coordination facilities, medical and dental facilities with Surgeon General | NR | | | |
| C-7 | Coordination of aviation facilities with FAA | NR | | | |
| C-8 | Coordination of traffic control and navigational aids with USACC | NR | | | |
| C-9 | Tabulation of types and numbers of aircraft | NR | | | |
| C-10 | Evaluation of laboratory, research and development and technical maintenance facilities | NR | | | |
| C-11 | Coordination checks with Chief of Chaplains | NR | | | |
| C-12 | Review food service facilities by USAFSA | NR | | | |
| C-13 | Automotive data processing system or equipment approved by analysis when ASD and/or communication centers not coordinated with related facilities | NR | | | |
| C-14 | Coordination postal facilities with U.S. Postal Service Regional Director | NR | | | |
| C-15 | Laundry and dry cleaning facilities - coordination with AED: & L | NR | | | |
| C-16 | Tenant facilities coordination with information warfare sites | NR | | | |
| C-17 | Facilities for or exposed to ionizing, laser, chemical, or biological - review by DDESB 1500 and item E-41 | NR | | | |
| C-18 | Analysis of collection | R | D | | 1 |
| C-19 | Consideration of alternatives | R | D | | 2 |
| C-20 | Determination whether decisions will include physically handicapped or disabled persons | NR | | | |
| C-21 | As-built drawings for alterations or additions | R | C | | |
| C-22 | Availability of Standard Design or the acceptable design | NR | | | |
| Other Architectural & Structural (List and Number items) | | | | | |
| 1. See Supplemental Data
Detailed Project Justification
Paragraphs 03. | | | | | |
| 2. See Supplemental Data
Detailed Project Justification
Paragraph 04. | | | | | |

REQUIRED OR NOT REQUIRED - Has request or no information to be furnished. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained and entered.

DOCUMENT ATTACHED - Significant information is or is existing and is being entered.

BY WHOM (Check and insert appropriate letter)

A - DPAE
B - Using Service
C - Construction Service
D - Designer
E - Other (Check Comment Attached and explain)

documentation checklist

5-8

DA FORM 5623-C.R, Feb 82

TM 5-800-3 C-9

D. MECHANICAL, ELECTRICAL & UTILITY SYSTEMS

| ITEM | | Required or Not Required | To Be Determined | Comments Attached | Documents Attached |
|---|--|--------------------------|------------------|-------------------|--------------------|
| | Final considerations and cost comparison analysis | A | D | | |
| D-2 | Energy requirements systems (ERA) | P | D | | L |
| D-3 | Conformance with DOD Energy Reduction requirements | P | D | | |
| D-4 | Evaluation of existing and/or proposed utility systems | E | P | | |
| Other Mechanical and Utility Systems (List and number items): | | | | | |
| 1. See Special Requirements, Paragraph 3 (SRP-3) | | | | | |

REQUIRED OR NOT REQUIRED - Not relevant or no information to document. Enter "R" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter "TBD" for information source.

COMMENT ATTACHED - Significant information summarized or explained and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

BY WHOM (Enter the most appropriate letter)

A - DPAE
 B - Using Service
 C - Construction Service
 D - L
 E - D. Enter Comments Attached and Attached

documentation checklist

5-9

DA FORM 5023-D-R, Feb 82

TM 5-810-3 C-11

E. ENVIRONMENTAL CONSIDERATIONS

ITEM

- E-1 Environmental Impact Statement
- E-2 EIA conclusion requires Environmental Impact Statement
- E-3 Determination of health, environmental or related hazards. Assistance in determining existence of any health, environmental or related hazards may be requested from Aberdeen Proving Ground, MD 21010, the Office of the Surgeon General ADP: OASG-MCH (Army Environmental Hygiene Agency)
- E-4 Air/water pollution permit, coordination with agencies and compliance with standards of Federal, State and local laws
- E-5 Corrective measures associated with Environmental Impact Statements or assessments must separately and provide

Other environmental considerations (No. and number items)

1. See Supplementary Data
Data and Project Justification
Paragraph D9.

| Planning
(Pre-Design) | Design
(Design) | Construction
(Construction) | Operation
(Operation) | Decommissioning
(Decommissioning) |
|--------------------------|--------------------|--------------------------------|--------------------------|--------------------------------------|
| F | J | | | |
| NR | | | | |
| NR | | | | |
| NR | | | | |
| NR | | | | |

REQUIRED OR NOT REQUIRED - Not relevant or no information to comment. Enter "NR" if item is relevant and is required for this project. Enter "NR" if item is irrelevant and is not required for this project.

TO BE DETERMINED - Information needed but not currently available. Enter "CD" for information source.

COMMENT ATTACHED - Significant information summarized or outlined and attached.

DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

* BY WHOM (Check and insert appropriate letter)

- A - DPAC
- B - Using Service
- C - Construction Service
- D - Designer
- E - Other (Check Symptom Attached and explain)

documentation checklist

5-10

DA FORM 5023-E-R, Feb 82

TN 3-800-3 C-13

APPENDIX D
TECHNICAL DATA CHECKLIST

A SPECIAL CONSIDERATIONS

ITEM

- A-1 Section of the project or phase which is covered in the report and not included in the scope
- A-2 Constituent of the equipment
- A-3 Functional description of the equipment, including structure and weight, if applicable
- A-4 Equipment in stock and location
- A-5 Other equipment and facilities (CMA, CPA, etc.)
- A-6 Special studies and tests (stress, strength, compatibility, etc.)
- A-7 Type of construction (materials, methods, etc.)
- A-8 Construction, equipment, equipment, equipment, etc. available and other handling and storage requirements. Funds used for construction.

Other special considerations not included in the report

| Required by this project | Not required by this project | Not required by this project | Not required by this project | Not required by this project |
|--------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| AS | | | | |
| P | | | | |
| AS | | | | |
| AS | | | | |
| AS | | | | |
| AS | | | | |
| AS | | | | |
| AS | | | | |

REQUIRED OR NOT REQUIRED - This is based on the information in the report. If the information is not in the report, it is not required.

AS DETERMINED - Information needed but not in the report. If the information is not in the report, it is not required.

COMMENT ATTACHED - Information needed but not in the report. If the information is not in the report, it is not required.

DOCUMENT ATTACHED - Information needed but not in the report. If the information is not in the report, it is not required.

AS DETERMINED - Information needed but not in the report. If the information is not in the report, it is not required.

AS DETERMINED

AS DETERMINED

AS DETERMINED

AS DETERMINED

AS DETERMINED

AS DETERMINED

technical data checklist

S-12

DA FORM 5624-2-R Feb 52

TVI 5-500-3

| B SITE DEVELOPMENT | | Design | Construction | Operation | Abandonment | Remediation |
|--|---|--------|--------------|-----------|-------------|-------------|
| B-1 Construction restrictions or exceptions pertaining to: | | | | | | |
| (A) | Site access and preferred construction routes | A | A | | | |
| (B) | Airside clearance, safe storage handling, safety, etc. | NR | | | | |
| (C) | Facilities and/or functions of adjoining areas structures materials impact | A | A | | | |
| B-2 Real estate actions (acquisition, disposal, lease, right-of-way) | | NR | | | | |
| B-3 Demolition/relocation restricted areas: | | | | | | |
| (A) | Special considerations due to explosives rad. act. in chemical contamination asbestos emissions toxic gases | R | A | | | |
| (B) | Restrictions on disposal of demolished re-located material including hazardous waste | NR | | | | |
| B-4 Pavement types and requirements including traffic surveys and ATMC coordination | | NR | | | | |
| B-5 Landscaping considerations: | | | | | | |
| (A) | Protection of existing vegetation | R | A | | | |
| (B) | Stochastic effects | NR | | | | |
| <p>Other site developments (List and number items)</p> <p>1. There is a possibility, that the existing lighting may contain RDS's in the ballasts.</p> | | | | | | |

REQUIRED OR NOT REQUIRED - Not to be used for information to determine if a project is required or not required for this checklist. Enter "A" if not required and "NR" if required for the project.

TO BE DETERMINED - Information needed but not currently available. Enter "NR" for information needed.

COMMENT ATTACHED - Information attached to the project and not attached.

DOCUMENT ATTACHED - Information attached to the project and not attached.

Legend: (Check and attach appropriate sheets)

- A - A-200
- B - Using Service
- C - Construction Service
- D - Design
- E - Other (Check Comments Attached and explain)

technical data checklist

5-13

C ARCHITECTURAL & STRUCTURAL

ITEM

- C1 Vision and producing equipment including location
- C2 Same zone and other design and criteria including hurricane cat 5 winds (100 mph or less) return 1
- C3 Protective shelter construction and location design criteria (minimum 100 mph and 100 ft high) (minimum 100 ft high)
- C4 Structural foundation requirements (incl. soil, seismic, load, foundation, incl. seismic treatment, foundation & soil, soil bearing)
- C5 Construction and strength of walls to be determined
- C6 Requirements and data for special design projects
- C7 Structural floor and roof loads (incl. equipment)
- C8 Security features (incl. doors, windows, interior doors, etc.)

Other Architectural & Structural (incl. long running items)

| Required or
Not Required | To Be
Optional | Comments
Added | Comments
Deleted |
|-----------------------------|-------------------|-------------------|---------------------|
| 1 | 2 | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |
| NR | | | |

PREPARED BY: NAME, ADDRESS, PHONE, FAX, E-MAIL, WEBSITE, etc. (if applicable) (if not applicable, leave blank)

TO BE DETERMINED: INFORMATION NEEDED FOR THE PROJECT (if not applicable, leave blank)

REVISION: DATE, BY, DESCRIPTION (if not applicable, leave blank)

REVISION: DATE, BY, DESCRIPTION (if not applicable, leave blank)

TO BE DETERMINED: INFORMATION NEEDED FOR THE PROJECT (if not applicable, leave blank)

REVISION: DATE, BY, DESCRIPTION (if not applicable, leave blank)

REVISION: DATE, BY, DESCRIPTION (if not applicable, leave blank)

technical data checklist

5-14

DA FORM 5074-C-R, Feb 82

TM 5-200-3 D-9

D. MECHANICAL, ELECTRICAL & UTILITY SYSTEMS

- 39 -

| | |
|------|--|
| D-1 | Spec. mechanics requirements of components needed from main DC |
| D-2 | Spec. mech. load for DC and load handling system |
| D-3 | Measurement system required to measure the DC power, current, etc. with existing equipment |
| D-4 | Powering-up-down system for the system to be used and the action to be taken and the timing of the commissioning of the system |
| D-5 | Heat recovery system for the system to be used and the characteristics of the system and the timing |
| D-6 | Working of the system in operation and the characteristics of the system to be used and the timing |
| D-7 | Electromechanical system to be used and the characteristics of the system and the timing of the commissioning of the system and the timing |
| D-8 | Heat recovery system for the system to be used and the characteristics of the system and the timing |
| D-9 | Energy requirements of the system and the timing of the system and the timing |
| D-10 | Spec. energy production |

Other Machine A will be System 1 and the other will be System 2

| Building Name | Room No. | Room Name | Room No. | Room Name | Room No. | Room Name |
|---------------|----------|-----------|----------|-----------|----------|-----------|
| NR | | | | | | |
| NR | | | | | | |
| | D | | | | | |
| NR | D | | | | | |
| NR | | | | | | |
| R | E | | | | | |
| NR | | | | | | |
| NR | | | | | | |
| R | D | | | | | |
| NR | | | | | | |

[illegible][illegible]

technical data checklist

5-15

E. ENVIRONMENTAL CONSIDERATIONS

| ITEM | | Required or Not Required | To Be Determined | Comments Attached | Documents Attached |
|------|---|--------------------------|------------------|-------------------|--------------------|
| E-1 | Water waste treatment, air quality, and noise noise disposal criteria
Other Environmental Considerations (List and number items) | NR | | | |

REQUIRED OR NOT REQUIRED - Not required or no information to determine. Enter "NR" if item is necessary and is required for the project. Enter "NR" if item is unnecessary and is not required for the project.
TO BE DETERMINED - Information needed but not currently available. Enter code for information source.
COMMENT ATTACHED - Significant information summarized or described and attached.
DOCUMENT ATTACHED - Significant information is in an existing document which is attached.

USE SOURCE (Check and insert appropriate letter)

- A - State
- B - Army Corps
- C - Construction Service
- D - Engineer
- E - Other (Check Comments Attached and document)

technical data checklist

5-16

DA FORM 5024-E-R, Feb 82

T3: 6-700-3 8-13

F. FIRE PROTECTION

ITEM

F-1 Special fire protection systems or features (detection and suppression equipment, hazards, etc.)
Other fire protection considerations (list and number items)

| Required or
Not Required | To Be
Developed | Comments
Attached | Document
Attached |
|-----------------------------|--------------------|----------------------|----------------------|
| NR | | | |

REQUIRED OR NOT REQUIRED - Not required or no information is given.
Comments: Enter "NR" if item is required and is required for the project.
Enter "NR" if item is not required and is not required for the project.

TO BE DETERMINED - Information needed but not currently available.
Enter code for information source.

COMMENT ATTACHED - Significant information summarized or explained
on attached.

DOCUMENT ATTACHED - Significant information is in an attached document.
Enter only if attached.

BY WHOM (Enter the most appropriate letter)

A - SPAG
B - Using Same as
C - Construction Schedule
D - Engineer
E - Other (Check Comments Attached and
explain)

technical data checklist

5-17

DA FORM 5024-F.R, Feb 82

TM 5-800-3 D-11

| | | | |
|--|-----------------|--|------------------------------------|
| 1 COMPONENT
ARMY | | 2 DATE
23 September | |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | 4 PROJECT TITLE
Interior Lighting Replacements and Controls at Blanchfield Hospital | |
| 5 PROGRAM ELEMENT | 6 CATEGORY CODE | 7 PROJECT NUMBER
ECIP #3 | 8 PROJECT COST (\$000)
\$424.00 |

| ITEM | UNIT | QUANTITY | UNIT COST | COST (\$000) |
|---|------|----------|-----------|--------------|
| Primary Facility | | | | |
| Interior Light Fixtures | Lt. | 1 | 165.36 | 365 |
| Subtotal | | | | 365 |
| Contingency (10%) | | | | 36 |
| Total Contract Cost | | | | 401 |
| Supervision, Inspection And Overhead (5%) | | | | 22 |
| Total Request | | | | 424 |

10. DESCRIPTION OF PROPOSED CONSTRUCTION

The existing interior lighting is a combination of standard efficiency fluorescent fixtures and incandescent. The proposed project will replace the interior lighting fixtures with T8 fluorescents with high efficiency electro ballasts and compact fluorescents. The implementation of this project will save \$,545,042 MJ/yr of electric energy. The first year dollar savings is \$70,518 and the Savings to Investment Ratio (SIR) is 2.27.

11. REQUIREMENT

Project: The proposed interior lighting project replaces lighting at the following Korean War Barracks w energy efficient lighting: 3211, 3212, 3213, 3214, 3215, 3216, 3217, 3218, 6709, 6710, 6711, 6712, 6719, 6720, 6725, 6726, 6727, 6728, 6730, 6732, 6733, 6909, 6910, 6912, 6917, 6918, 6919, 6920, 6923, 6928, 6929, 6930, 6931, 6936, 6937, 6938, 6939, 6940, 6943, 6944, 6945.

Requirement: This project is required to reduce the energy consumption of lighting systems and to comply with the Army Energy Resource Management Plan (ERMP) and Executive Order 12759. The proposed project will reduce annual energy consumption by 9,572,124 MJ/yr and annual energy cost by \$143,900.

Current Situation: The existing lighting at Blanchfield Hospital in buildings B and C is inefficient fluorescent and incandescent fixtures. The lighting in the doctors' offices and exam rooms in building C are controlled manual switches and are left on unnecessarily many hours of the day.

CD FORM 101
1 DEC 79

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| | | | | | |
|--|--|---|--|-----------------------------|--|
| 1 COMPONENT
ARMY | | FY 19 94 MILITARY CONSTRUCTION PROJECT DATA | | 2 DATE
23 September 6 | |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | | | | |
| 4 PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFIELD HOSPITAL | | | | 5 PROJECT NUMBER
ECIP 43 | |
| <p>Impact if not provided: If the proposed project is not funded, a reduction of 5,545,042 MJ/yr cannot be achieved, and excessive amounts of energy will continue to be used. There will be no contribution to energy reduction goals established for United States Army facilities by Army Headquarters.</p> | | | | | |
| <p style="text-align: right;">Colonel USA
Commanding</p> | | | | | |
| ESTIMATED CONSTRUCTION START: | | September 1995 | | INDE | |
| ESTIMATED MIDPOINT OF CONSTRUCTION: | | April 1996 | | INDE | |
| ESTIMATED CONSTRUCTION COMPLETION: | | November 1996 | | INDE | |
| DETAILED JUSTIFICATIONS | | | | | |
| D1. GENERAL | | | | | |
| <p>The proposed project encompasses the replacement of lighting at Blanchfield Hospital, buildings B and C, exclusive of patients' rooms and surgical suites. The project will decrease the energy consumption of the lighting system without reducing light levels except where necessary. The project also installs occupancy sensors in the doctors' offices and exam rooms in building C. Lights will be automatically switched off when not required.</p> | | | | | |
| D2. ACCOMMODATIONS NOW IN USE: | | | | | |
| <p>The existing lighting systems are comprised of standard efficiency fluorescent and incandescent fixtures. The lighting systems in the doctors' offices and exam rooms in building C have manual controls.</p> | | | | | |
| D3. ANALYSIS OF DEFICIENCY | | | | | |
| <p>Currently, Blanchfield Hospital buildings B and C are using standard or low efficiency fixtures for lighting. The purpose of this project is to replace the existing lighting with new light fixtures which are much more efficient along with installing automatic controls in areas where lights are left on unnecessarily. The current deficiency results in large amounts of energy usage to maintain adequate lighting.</p> | | | | | |

DD FORM 1291
1-88

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| | | |
|--|--|-----------------------------|
| 1 COMPONENT
ARMY | 2 FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | 3 DATE
23 September 9 |
| 4 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | |
| 5 PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFIELD HOSPITAL | | 6 PROJECT NUMBER
ECIP #3 |
| <p>D4. CONSIDERATION OF ALTERNATIVES:</p> <p>The only alternatives to the proposed project are to install lower efficiency light fixtures or more sophisticated controls. The disadvantages of using lower efficiency light fixtures is that less energy savings can be realized without significantly reducing the construction cost. If a less efficient light fixture is selected, the project will have a lower SIR. Installing more sophisticated controls would significantly increase the construction cost without increasing the savings. The project would have a lower SIR.</p> <p>D5. CRITERIA FOR PROPOSED PROJECT:</p> <p>The proposed project will conform with all applicable federal and United States Army Regulations.</p> <p>D6. PROGRAM FOR RELATED EQUIPMENT:</p> <p>No equipment funded from appropriations other than MCA are required.</p> <p>D7. DISPOSAL OF PRESENT ASSETS:</p> <p>Light fixtures at Blanchfield Hospital in buildings B and C will be disposed.</p> <p>D8. SURVIVAL FACILITIES:</p> <p>The proposed project is not suitable for inclusion of protective shelters.</p> <p>D9. SUMMARY OF ENVIRONMENTAL CONSEQUENCES:</p> <p>The proposed project has been analyzed and will not adversely impact the environment. Energy savings resulting from this project will conserve natural resources.</p> <p>D10. EVALUATION OF FLOOD HAZARDS AND ENCROACHMENT ON WETLANDS:</p> <p>It has been determined that these facilities are not located in a flood plain and they do not encroach wetlands.</p> <p>D11. ECONOMIC JUSTIFICATION:</p> <p>The proposed project qualifies under ECIP Guidelines in AR-415-15. SIR for the project is 2.27 with a simple payback of 5.33 years.
See Economic Analysis, SRP-1</p> | | |

DD FORM 131
1 DEC 78

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WHEN DATA IS ENTERED

| | |
|--|-----------------------------|
| 1 COMPONENT
ARMY | 2 DATE
23 September 9 |
| 3. INSTALLATION AND LOCATION
Fort Campbell, Kentucky | |
| 4 PROJECT TITLE
INTERIOR LIGHTING REPLACEMENTS AND CONTROLS AT BLANCHFIELD HOSPITAL | 5 PROJECT NUMBER
ECIP #3 |
| <p>D12. UTILITY AND COMMUNICATION SUPPORT:</p> <p>A. No related utility support projects are programmed. Adequate utilities are available to support the project.</p> <p>B. No telecommunication support is required.</p> <p>D13. PROTECTION OF HISTORIC PLACES AND ARCHEOLOGICAL SITES:</p> <p>The project involves the replacement of light fixtures and installation of controls in existing buildings. Review procedures have been implemented for this project in accordance with 38 CFT 800. The review has established that there will be no effect.</p> <p>D14. PROJECT DEVELOPMENT BROCHURE (PART 1):</p> <p>A Project Development Brochure was prepared on 23 September 94 and is attached as a part of the programming documentation.</p> <p>D15. ENERGY REQUIREMENTS:</p> <p>The proposed project will reduce present energy consumption by 6,545,042 MJ/yr at the cost savings \$79,518 per year. See Energy Requirements Appraisal (EPA) in Special Requirements, Paragraph 3 (SRP).</p> <p>D16. PROVISION FOR THE HANDICAPPED:</p> <p>No provisions for the handicapped will be made since the scope of the project is in no way applicable designing for the handicapped.</p> <p>D17. REAL PROPERTY MAINTENANCE ACTIVITY (RPMA) ANALYSIS:</p> <p>A. Physical Impact: There will be light fixture removed and replaced by the same number of light fixture. Occupancy sensors will be installed in place of wall mounted switches. No new structures will be added.</p> | |

| | | |
|---|--|-----------------------------|
| 1 COMPONENT
ARMY | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | 2 DATE
23 September 84 |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | |
| 4 PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFIELD HOSPITAL | | 5 PROJECT NUMBER
ECIP #3 |

B. Operations and Maintenance (O&M) impact:

| O&M | |
|-------------|---------------------------|
| <u>YEAR</u> | <u>NET CHANGE (\$000)</u> |
| 1994 | -6.1 |
| 1995 | -6.1 |
| 1996 | -6.1 |

C. Backlog of Maintenance and Repair (BMAR) impact:

There will be no net change in the number of fixtures or in fixture life expectancy. There will be no effect on BMAR.

D18. COMMERCIAL ACTIVITIES:

The proposed project is not a 'New Start Expansion' as defined by DA Circular 235-1. The project has been reviewed in light of the requirements of commercial and industrial facilities. It has been determined that whereas the project does not affect commercial facilities, the requirements of DA Circular 235-1 does not apply.

| | | | | | |
|---|--|-----------------------------|---------------------------|---|---------------------------|
| 1 COMPONENT
ARMY | FY 19 <u>94</u> MILITARY CONSTRUCTION PROJECT DATA | | 2 DATE
23 September 94 | | |
| 3 INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | | | | |
| 4 PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCH-FIELD HOSPITAL | | 5 PROJECT NUMBER
ECIP #3 | | | |
| <p>Life Cycle Cost Analysis
 Project Title: Interior Lighting Replacements and Controls
 Fiscal Year: 1994
 Analysis Date 09/23/94
 Economic Life: Fifteen (15) Years</p> | | | | | |
| 1 INVESTMENT | | | | | |
| A CONSTRUCTION COST | | 385 457 | | | |
| B. SIGN | | 19 273 | | | |
| C DESIGN COST | | 19 273 | | | |
| D ENERGY CREDIT CALC | | -0- | | | |
| E SALVAGE VALUE | | -0- | | | |
| F. TOTAL INVESTMENT | | 424 003 | | | |
| 2. ENERGY SAVINGS
ANALYSIS DATE ANNUAL SAVINGS, UNIT COST & DISCOUNTED SAVINGS | | | | | |
| FUEL | COST
\$7.50 (1) | SAVINGS
MBtu/YR (2) | ANNUAL \$
SAVINGS (3) | DISCOUNT
FACTOR (4) | DISCOUNTED
SAVINGS (5) |
| A ELECT | 6 18 | 5258 | 32 482 | 12.43 | 403.752 |
| B DIST | | | | | |
| C. RESID | | | | | |
| D. NG | | | | | |
| E DEMAND | | | 40 974 | 11.85 | 485.342 |
| F TOTAL | | 5258 | 73 456 | | 689 294 |
| 3 NON-ENERGY SAVINGS | | | | | |
| A. ANNUAL RECURRING
(1) DISCOUNT FACTOR | | 11 85 | | | 86082 |
| (2) DISCOUNTED SAVINGS | | | | | 371 829 |
| B NON-RECURRING
SAVINGS | | | | | |
| ITEM | SAVINGS (-)
COST (-X1) | YEAR OF
OCCURRENCE (2) | DISCOUNT
FACTOR (3) | DISCOUNTED
SAVINGS (-)
COST (-X4) | |
| a. Replace Interior | | | | | |
| b. Replace Exterior | | | | | |
| c | | | | | |
| d. Total | | | | | |
| C. TOTAL NON ENERGY DISCOUNTED SAVINGS (-)/COST (-) | | | | | 71.83 |

DD FORM 1301
1 DEC 76

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5-2:

| | | | | | |
|--|--|--|--|------------------------------|--|
| 1. COMPONENT
ARMY | | FY 19 <u>84</u> MILITARY CONSTRUCTION PROJECT DATA | | 2. DATE
23 September 84 | |
| 3. INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | | | | |
| 4. PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFIELD HOSPITAL | | | | 5. PROJECT NUMBER
ECIP #3 | |
| SPECIAL REQUIREMENTS PARAGRAPH 1 (SRP-1) (continued) | | | | | |
| 4. FIRST YEAR DOLLAR SAVINGS | | | | \$ 79.51 | |
| 5. SIMPLE PAYBACK PERIOD | | | | 333 Year | |
| 6. TOTAL NET DISCOUNTED SAVINGS | | | | \$981.12 | |
| 7. DISCOUNTED SAVINGS RATIO | | | | 2.2 | |

60 FORM 1391
1 DEC 78

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FOR OFFICIAL USE ONLY
(WHEN DATA IS ENTERED)

| | | |
|---|---|------------------------------|
| 1. COMPONENT
ARMY | 2. PROJECT TITLE
FY 13 94 MILITARY CONSTRUCTION PROJECT DATA | 3. DATE
23 September 8 |
| 4. INSTALLATION AND LOCATION
Fort Campbell, Kentucky | | |
| 5. PROJECT TITLE
INTERIOR LIGHTING REPLACEMENT AND CONTROLS AT BLANCHFELD HOSPITAL | | 6. PROJECT NUMBER
ECIP 23 |

SPECIAL REQUIREMENTS PARAGRAPH 3 (SRP-3).

Energy Requirements Appraisal (ERA)

1. Project Description: Replace existing lighting systems with more efficient lighting system without reducing the light levels. Install occupancy sensors in doctor's offices and exam room.
2. Estimated Energy Consumption: The buildings are currently lit by standard efficiency lighting. The existing lighting system consumes 7,738,341 MJ/yr of energy. Replacing the existing lighting with high efficiency lighting and installing occupancy sensors will result in 5,545,042 MJ/yr of electrical energy savings, a seventy-two percent (72%) reduction in current energy consumption.
3. Energy Sources: No new energy sources are required for the proposed project. The use of solar energy for this project is impractical.
4. Energy Use Impacts: The proposed project will substantially reduce the consumption of electricity for lighting. The burden on the existing base distribution system will be lessened.
5. Energy Conservation: The proposed project will reduce annual energy consumption to 5,545,042 MJ/yr with annual energy cost savings of \$79,518. The project complies with Air Resource Management Plan (ERMP) and Executive Order 12759.
6. Energy Alternatives: The proposed project represents the greatest possible reduction in energy consumption seventy-two percent (72%), without reducing the current lighting levels. The current levels do not exceed the levels recommended by ASHRAE.
7. Energy Effects: The proposed project provides positive environmental effects. It reduces the current energy consumption by seventy-two percent (72%), effectively reducing the consumption of non-renewable fuel sources. The degrading of environmental standards would not make more efficient energy sources available.
8. Basis of Approval: Total energy requirements and alternative fuel sources have been considered and included in this appraisal or discarded as applicable.

DS FORM 1291
1 SEP 79

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WHEN DATA IS ENTERED:

TABLE 5.1

and might not require the same level of protection as the other two.

LIFE CYCLE COST ANALYSIS SUMMARY
 ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP)
 INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3
 PROJECT NO. & TITLE: HOSPTOTL INTERIOR LIGHTING & CONTROLS @ HOSPTT
 FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING
 ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLI

33E

1. INVESTMENT
 A. CONSTRUCTION COST \$ 385457.
 B. SICH \$ 19273.
 C. DESIGN COST \$ 19273.
 D. TOTAL COST (1A+1B+1C) \$ 424003.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0.
 F. PUBLIC UTILITY COMPANY RATE \$ 0.
 G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 424003.

2. ENERGY SAVINGS (+) / COST (-)
 DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

| FUEL | UNIT COST
\$/MBTU(1) | SAVINGS
MBTU/YR(2) | ANNUAL \$
SAVINGS(3) | DISCOUNT
FACTOR(4) | DISCOUN
SAVINGS |
|-------------------|-------------------------|-----------------------|-------------------------|-----------------------|--------------------|
| A. ELECT | \$ 6.18 | 5256. | \$ 32482. | 12.43 | \$ 403 |
| B. DIST | \$.00 | 0. | \$ 0. | 13.56 | \$ |
| C. RESID | \$.00 | 0. | \$ 0. | 15.09 | \$ |
| D. NAT G | \$.00 | 0. | \$ 0. | 15.86 | \$ |
| E. COAL | \$.00 | 0. | \$ 0. | 13.61 | \$ |
| F. LPG | \$.00 | 0. | \$ 0. | 12.64 | \$ |
| M. DEMAND SAVINGS | | | \$ 46974. | 11.85 | \$ 405 |
| N. TOTAL | | 5256. | \$ 73455. | | \$ 809 |

3. NON ENERGY SAVINGS (+) / COST (-)
 A. ANNUAL RECURRING (+/-)
 (1) DISCOUNT FACTOR (TABLE A) 11.85
 (2) DISCOUNTED SAVINGS/COST (3A X 3A1) \$ 71
 B. NON RECURRING SAVINGS (+) / COSTS (-)

| ITEM | SAVINGS (+)
COST (-)
(1) | YR
CC
(2) | DISCNT
FACTR
(3) | DISCOUNTED
SAVINGS (+) /
COST (-) (4) |
|----------|--------------------------------|-----------------|------------------------|---|
| d. TOTAL | \$ 0. | | | 0. |

 C. TOTAL NON ENERGY DISCOUNTED SAVINGS (+) / COST (-) (3A2+3Bd4) \$ 71
 4. FIRST YEAR DOLLAR SAVINGS 2N5+3A-(3Bd1/(YRS ECONOMIC LIFE)) \$ 79
 5. SIMPLE PAYBACK PERIOD (1G/4) 5.33
 6. TOTAL NET DISCOUNTED SAVINGS (2N5+3C) \$ 942
 7. SAVINGS TO INVESTMENT RATIO (SIR)=(6 / 1G) 2.27
 (IF < 1 PROJECT DOES NOT QUALIFY)
 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR) 6.60

LIFE CYCLE COST ANALYSIS SUMMARY
 ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) STUDY: ECO1HCSP
 LCCID 1.080
 INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 CENSUS: 3
 PROJECT NO. & TITLE: ECO1HCSP INTERIOR LIGHTING & HOSPITAL
 FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING
 ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLE

1. INVESTMENT
 A. CONSTRUCTION COST \$ 374668.
 B. SIGN \$ 18734.
 C. DESIGN COST \$ 18734.
 D. TOTAL COST (1A+1B+1C) \$ 412135.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0.
 F. PUBLIC UTILITY COMPANY REBATE \$ 0.
 G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 412135.

2. ENERGY SAVINGS (+) / COST (-)
 DATE OF NISTIR 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

| FUEL | UNIT COST \$/MBTU(1) | SAVINGS NETU/YR(2) | ANNUAL \$ SAVINGS(3) | DISCOUNT FACTOR(4) | DISCOUNT SAVINGS(5) |
|-------------------|----------------------|--------------------|----------------------|--------------------|---------------------|
| A. ELECT | \$ 6.18 | 4672. | \$ 28873. | 12.43 | \$ 3588 |
| B. DIST | \$.00 | 0. | \$ 0. | 13.56 | \$ |
| C. RESID | \$.00 | 0. | \$ 0. | 13.09 | \$ |
| D. NAT G | \$.00 | 0. | \$ 0. | 15.86 | \$ |
| E. COAL | \$.00 | 0. | \$ 0. | 13.61 | \$ |
| F. LPG | \$.00 | 0. | \$ 0. | 12.64 | \$ |
| M. DEMAND SAVINGS | | | \$ 40374. | 11.85 | \$ 4855 |
| N. TOTAL | | 4672. | \$ 69547. | | \$ 8444 |

3. NON ENERGY SAVINGS (+) / COST (-)

A. ANNUAL RECURRING (+/-)
 (1) DISCOUNT FACTOR (TABLE A) 11.85
 (2) DISCOUNTED SAVING/COST (3A X 3A1) \$ 718

B. NON RECURRING SAVINGS (+) / COSTS (-)

| ITEM | SAVINGS (+) COST (-) (1) | YR OC (2) | DISCNT FACTR (3) | DISCOUNTED SAVINGS (+) / COST (-) (4) |
|----------|--------------------------|-----------|------------------|---------------------------------------|
| d. TOTAL | \$ 0. | | | 0. |

C. TOTAL NON ENERGY DISCOUNTED SAVINGS (-)/COST (-) (3A2-3B34) \$ 718

4. FIRST YEAR DOLLAR SAVINGS $2N3-3A+(3B31/(YRS ECONOMIC LIFE))$ \$ 751

5. SIMPLE PAYBACK PERIOD (10/4) 5.43

6. TOTAL NET DISCOUNTED SAVINGS (2N5-3C) \$ 9162

7. SAVINGS TO INVESTMENT RATIO (SIR) = $(6 / 10) = 2.22$
 (IF < 1 PROJECT DOES NOT QUALIFY)

8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 8.74

FORT CAMPBELL LIGHTING SURVEY **ECO 1: INTERIOR / EXTERIOR LIGHTING** **19 AUGUST 1994**

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

| | |
|----------------------------------|-------------------|
| BUILDING #: | 650 - HOSPITAL |
| AREA: | |
| AREA USE: | |
| WEEKDAY: | 9 |
| WEEKEND: | 9 |
| BUILDING VOLTAGE: | 277 |
| ELECTRIC COSTS
LINHOLY CHARGE | \$0.0211 PER KWHR |
| DEMAND CHARGE | \$11.74 PER KW |

EXISTING FIXTURE DATA

| | | | |
|-----------------------------|------------|---------------|---------|
| 2 FOOT | 2 LAMP U @ | 82 WATTS | 0 WATTS |
| 4 FOOT | 1 LAMP @ | 45 WATTS | 0 WATTS |
| | 2 LAMP @ | 90 WATTS | 0 WATTS |
| | 3 LAMP @ | 135 WATTS | 0 WATTS |
| | 4 LAMP @ | 180 WATTS | 0 WATTS |
| 8 FOOT | 3 LAMP @ | 135 WATTS | 0 WATTS |
| BASELINE ENERGY CONSUMPTION | | 14,327 KWH/YR | |
| BASELINE DEMAND | | 391.575 KVA | |
| | | 78.23 KW | |

REPLACEMENT FIXTURE DATA

| | | | |
|------------------------|--------------|-----------|---------------|
| 2 FOOT | 0 2 LAMP U @ | 0 WATTS | 0 WATTS |
| 4 FOOT | 45 1 LAMP @ | 75 WATTS | 0.304 KWH/YR |
| | 378 2 LAMP @ | 54 WATTS | 21.460 KWH/YR |
| | 0 3 LAMP @ | 0 WATTS | 0 WATTS |
| | 0 4 LAMP @ | 0 WATTS | 0 WATTS |
| 8 FOOT | 0 2 LAMP @ | 125 WATTS | 0 WATTS |
| ECO ENERGY CONSUMPTION | | | 53.278 KWH/YR |
| ECO DEMAND | | | 191.772 KVA |
| | | | 22.77 KW |

NET ENERGY SAVINGS
 379.803 KWH/YR

NET DEMAND SAVINGS
 379.803 KVA

NET DOLLAR SAVINGS
 \$9,857 /YR

NET DOLLAR SAVINGS
 \$9,857 /YR

FORT CAMPBELL LIGHTING SURVEY

ECQ 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING NO. 910 - HOSPITAL

AREA:

FOURTH FLOOR

DAY SURGE

277

ELECTRIC DATA
ENERGY CHARGE
DEMAND CHARGE

\$0.0211 PER KWHR

\$11.78 PER KW

EXISTING FIXTURE DATA

| | | | | | | | |
|--------|--------------|----------|-------------|--------|--------------|----------|-------------|
| 2 FOOT | 3 2 LAMP U @ | 82 WATT | 276 WATTS | 2 FOOT | 3 2 LAMP U @ | 82 WATT | 276 WATTS |
| | 36 2 LAMP @ | 65 WATT | 1,530 WATTS | | 36 2 LAMP @ | 65 WATT | 1,530 WATTS |
| 4 FOOT | 3 1 LAMP @ | 45 WATT | 135 WATTS | 4 FOOT | 3 1 LAMP @ | 45 WATT | 135 WATTS |
| | 90 2 LAMP @ | 90 WATT | 8,100 WATTS | | 90 2 LAMP @ | 90 WATT | 8,100 WATTS |
| | 3 LAMP @ | 135 WATT | 405 WATTS | | 3 LAMP @ | 135 WATT | 405 WATTS |
| | 4 LAMP @ | 180 WATT | 720 WATTS | | 4 LAMP @ | 180 WATT | 720 WATTS |

REPLACEMENT FIXTURE DATA

| | | | | | | | |
|--------|--------------|----------|-------------|--------|--------------|----------|-------------|
| 2 FOOT | 3 2 LAMP U @ | 54 WATT | 162 WATTS | 2 FOOT | 3 2 LAMP U @ | 54 WATT | 162 WATTS |
| | 36 2 LAMP @ | 54 WATT | 1,944 WATTS | | 36 2 LAMP @ | 54 WATT | 1,944 WATTS |
| 4 FOOT | 3 1 LAMP @ | 29 WATT | 87 WATTS | 4 FOOT | 3 1 LAMP @ | 29 WATT | 87 WATTS |
| | 90 2 LAMP @ | 58 WATT | 5,220 WATTS | | 90 2 LAMP @ | 58 WATT | 5,220 WATTS |
| | 3 LAMP @ | 87 WATT | 261 WATTS | | 3 LAMP @ | 87 WATT | 261 WATTS |
| | 4 LAMP @ | 116 WATT | 464 WATTS | | 4 LAMP @ | 116 WATT | 464 WATTS |

| | | | | | | | |
|--------|-------------|----------|-------------|--------|-------------|----------|-------------|
| 8 FOOT | 3 LAMP @ | 108 WATT | 324 WATTS | 8 FOOT | 3 LAMP @ | 108 WATT | 324 WATTS |
| | 36 2 LAMP @ | 108 WATT | 3,888 WATTS | | 36 2 LAMP @ | 108 WATT | 3,888 WATTS |
| | 3 LAMP @ | 162 WATT | 486 WATTS | | 3 LAMP @ | 162 WATT | 486 WATTS |
| | 4 LAMP @ | 216 WATT | 864 WATTS | | 4 LAMP @ | 216 WATT | 864 WATTS |

NET ENERGY SAVINGS

88,248 KWH/HR

NET DEMAND SAVINGS

\$733 PER

NET ENERGY SAVINGS

88,248 KWH/HR

NET DEMAND SAVINGS

\$1,978 PER

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 660 - HOSPITAL
 AREA: 18
 HOURS/DAY: 5
 DAYS/WEEK: 5

ELECTRIC COSTS
 ENERGY CHARGE: \$0.0211 PER KWH
 DEMAND CHARGE: \$11.78 PER KW

BUILDING VOLTAGE: 277

EXISTING FIXTURE DATA

2 FOOT
 20 2 LAMP U 92 W/FXT = 1,840 WATTS

4 FOOT
 1 LAMP @ 45 W/FXT = 45 WATTS
 700 2 LAMP @ 92 W/FXT = 71,600 WATTS
 80 3 LAMP @ 137 W/FXT = 10,960 WATTS
 542 4 LAMP @ 166 W/FXT = 90,728 WATTS

8 FOOT
 2 LAMP @ 166 W/FXT = 332 WATTS

REPLACEMENT FIXTURE DATA

2 FOOT
 20 2 LAMP U @ 58 W/FXT = 1,160 WATTS

4 FOOT
 775 1 LAMP @ 20 W/FXT = 15,500 WATTS
 673 2 LAMP @ 45 W/FXT = 60,510 WATTS
 0 3 LAMP @ 87 W/FXT = 0 WATTS
 0 4 LAMP @ 116 W/FXT = 0 WATTS

8 FOOT
 0 2 LAMP @ 175 W/FXT = 0 WATTS

ECO ENERGY CONSUMPTION 278,719 KWH/YR
 1,906,380 MJ/YR

ECO DEMAND 58.77 KW

BASELINE ENERGY CONSUMPTION 888,318 KWH/YR
 3,081,506 MJ/YR

BASELINE DEMAND 183.36 KW

NET ENERGY SAVINGS 2,882,888 MJ/YR
 1,974 MBTU/YR

NET DEMAND SAVINGS 807,574 YR
 NET DOLLAR SAVINGS 829,783 YR

FORT CAMPBELL LIGHTING SURVEY

ECG 1: EXTERIOR / EXTERIOR LIGHTING

19 AUGUST 1986

EXTERIOR LIGHTING: FLUORESCENT FIXTURE REPLACEMENT

BUILDING #: 650 - HOSPITAL

AREA:

AREA USE

HOURS/DAY

DAYS/WEEK

24

7

BUILDING VOLTAGE 277

ELECTRIC COSTS:
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.78 PER KW

EXISTING FIXTURE DATA

| | | | | | | | |
|--------|------------|--------------|-------------|--------|------------|--------------|--------------|
| 2 FOOT | 2 LAMP U @ | 82 W/FT = | 0 WATTS | 2 FOOT | 2 LAMP U @ | 82 W/FT = | 0 WATTS |
| 4 FOOT | 1 LAMP @ | 82 W/FT = | 0 WATTS | 4 FOOT | 4 LAMP @ | 82 W/FT = | 11,880 WATTS |
| | 2 LAMP @ | 57.132 WATTS | | | 2 LAMP @ | 57.132 WATTS | 13,572 WATTS |
| | 3 LAMP @ | 132 W/FT = | 0 WATTS | | 3 LAMP @ | 132 W/FT = | 0 WATTS |
| | 2 LAMP @ | 164 W/FT = | 4,232 WATTS | | 2 LAMP @ | 164 W/FT = | 0 WATTS |
| 8 FOOT | 2 LAMP @ | 164 W/FT = | 0 WATTS | 8 FOOT | 2 LAMP @ | 164 W/FT = | 0 WATTS |

REPLACEMENT FIXTURE DATA

| | | | |
|--------|------------|--------------|--------------|
| 2 FOOT | 2 LAMP U @ | 82 W/FT = | 0 WATTS |
| 4 FOOT | 4 LAMP @ | 82 W/FT = | 11,880 WATTS |
| | 2 LAMP @ | 57.132 WATTS | 13,572 WATTS |
| | 3 LAMP @ | 132 W/FT = | 0 WATTS |
| | 2 LAMP @ | 164 W/FT = | 0 WATTS |
| 8 FOOT | 2 LAMP @ | 164 W/FT = | 0 WATTS |

| | | | |
|-----------------------------|----------------|------------------------|----------------|
| BASELINE ENERGY CONSUMPTION | 304,074 KWH/YR | ECO ENERGY CONSUMPTION | 222,436 KWH/YR |
| BASELINE DEMAND | 1,500.073 KW | ECO DEMAND | 885.778 KW |

| | | | |
|--------------------|----------------|--------------------|-------------|
| NET ENERGY SAVINGS | 1,128,305 BLYR | NET DEMAND SAVINGS | 42,876 ATR |
| NET ENERGY SAVINGS | 1,070 BLYR | NET DEMAND SAVINGS | 511,785 ATR |

FORT CAMPBELL LIGHTING SURVEY

ECO 1: INTERIOR / EXTERIOR LIGHTING

19 AUGUST 1994

INTERIOR LIGHTING: INCANDESCENT LAMP REPLACEMENT

BUILDING #: ASD - HOSPITAL
AREA: DRESSING ROOMS

LAMP USE: 18

HOURS/DAY: 5

DAYS/WEEK: 1 (1-YES, 2 NO)

PEAK USE: 1 (1-YES, 2 NO)

BUILDING VOLTAGE: 277

ELECTRIC COSTS
ENERGY CHARGE \$0.0211 PER KWH
DEMAND CHARGE \$11.76 PER KW

| EXISTING INCANDESCENTS | | COMPACT FLUORESCENT REPLACEMENT | |
|-----------------------------|------------|---------------------------------|------------|
| LAMPS @ 52 WATTS = | 0 WATTS | 0 LAMPS @ 13 WATTS = | 0 WATTS |
| LAMPS @ 60 WATTS = | 0 WATTS | 0 LAMPS @ 18 WATTS = | 0 WATTS |
| LAMPS @ 75 WATTS = | 0 WATTS | 48 LAMPS @ 26 WATTS = | 1248 WATTS |
| LAMPS @ 90 WATTS = | 0 WATTS | | |
| 48 LAMPS @ 135 WATTS = | 6480 WATTS | | |
| BASELINE ENERGY CONSUMPTION | | ECO ENERGY CONSUMPTION | |
| 30.135 KWH | | 1.248 KWH | |
| 109,175 Btu | | 4,493 MJ | |
| BASELINE DEMAND | | ECO DEMAND | |
| 6.48 KW | | 1.25 KW | |

NET ENERGY SAVINGS: 104,982 Btu/YR
NET ENERGY SAVINGS: 40 Mbtu/Yr
NET DEMAND SAVINGS: \$740 /Yr
NET DOLLAR SAVINGS: \$1,354 /Yr

SYSTEMS_{corp}

SYSTEMS ENGINEERING AND MANAGEMENT CORPORATION

BLDG 650 - HOSPITAL

ELECTRICAL COSTS - ENERGY CHARGE \$.02114/KWH
DEMAND CHARGE \$ 11.72/KW

ASSUMPTIONS - CHILLER COP = 3

$$1. \text{ DEMAND SAVINGS} = \left[\frac{\text{BASE LINE DEMAND}}{\text{COEFFICIENT}} - \text{ECC DEMAND} \right] \times \text{COEFFICIENT}$$

$$= \text{COP OF CHILLERS} \times \frac{12 \text{ MONTHS}}{\text{YR}} \times \$ \frac{11.72}{\text{KW}}$$

$$= (332.41 \text{ KW} - 119.02 \text{ KW}) / 3 \times 12 \times \$ 11.72 / \text{KW}$$

$$= \$ 10,243 / \text{YR} \quad (72.40 \text{ KW})$$

$$2. \text{ ENERGY SAVINGS} = \text{KW OF COOLING SAVED} \times .5 \times 8760 \frac{\text{HR}}{\text{YR}} \times .02114 \frac{\$}{\text{KWH}}$$

$$= 72.40 \text{ KW} \times .5 \times 8760 \frac{\text{HR}}{\text{YR}} \times .02114 \frac{\$}{\text{KWH}}$$

$$= \$ 6,709 / \text{YR} \quad (317,574.8 \text{ KWH OF COOLING SAVED})$$

$$3. \text{ TOTAL SAVINGS} = \$ 10,243 + \$ 6,709 = \$ 16,952 / \text{YR}$$

THE Ceiling Savings Due to Reduction in Lighting Load

PROJECT FOR CAMPBELL LIGHTING ONLY
Circuit Breaker / Lighter Limiting

Checked By

Prepared By

Job No
J-1015-71

Date

MAY 94

Sheet No. PAGE 3

1 OF 1

28-Jul-94

MeansData for Lotus

Page

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*****
Estimate:  Lighting-opt.4      Date:  12 July 1994
Description: Hospital
Project:   Lighting Study     Bid Date:
Location:  Ft. Campbell       Job #:
Sq. footage:                      City indx:
*****

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| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|--------------|-----------------------------------|----------|----------|-------|-----------|------------|-------|
| 0207082119 | DEMO. 2X2', 1X4' FLUOR FIXTURES | | | | | 1023.00 EA | |
| Unit values | 0.36 | 0.00 | 10.00 | 0.00 | 0.00 | 10.00 | |
| Totals | 372.37 | \$0 | \$10,230 | \$0 | \$0 | \$10,230 | |
| 0207082121 | DEMO. 2X4' FLUOR FIXTURES | | | | | 1297.00 EA | |
| Unit values | 0.49 | 0.00 | 13.35 | 0.00 | 0.00 | 13.35 | |
| Totals | 629.05 | \$0 | \$17,315 | \$0 | \$0 | \$17,315 | |
| 0207082122 | DEMO. STRIP/INDUST FLUOR FIXTURES | | | | | 295.00 EA | |
| Unit values | 0.32 | 0.00 | 8.80 | 0.00 | 0.00 | 8.80 | |
| Totals | 94.40 | \$0 | \$2,596 | \$0 | \$0 | \$2,596 | |
| 0207082123 | DEMO. INCAND FIXTURES/EXIT LIGHTS | | | | | 48.00 EA | |
| Unit values | 0.26 | 0.00 | 7.10 | 0.00 | 0.00 | 7.10 | |
| Totals | 12.38 | \$0 | \$341 | \$0 | \$0 | \$341 | |
| U02 SITEMORK | 1109 | \$0 | \$30,482 | \$0 | \$0 | \$30,482 | |

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------|--|-----------|----------|-------|-----------|-----------|-----------|
| 1661307777 | L.E.D. EXIT SIGN
SINGLE FACE | | | | | 0.00 EA | |
| Unit values | 1.00 | 185.00 | 27.50 | 0.00 | 0.00 | | 212.50 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | | \$0 |
| 1661308803 | COMP FLUOR, 9" ROUND REC, 2 26W QT
OPEN REFLECTOR | | | | | 48.00 EA | |
| Unit values | 2.29 | 0.00 | 63.00 | 0.00 | 0.00 | | 63.00 |
| Totals | 109.92 | \$0 | \$3,024 | \$0 | \$0 | | \$3,024 |
| 1661309901 | REC FLUOR TROFFER PARABOLIC 2X2' W 2 32W T3-U
3" DEEP, 9-CELL | | | | | 23.00 EA | |
| Unit values | 1.40 | 114.00 | 38.50 | 0.00 | 0.00 | | 152.50 |
| Totals | 32.29 | \$2,622 | \$886 | \$0 | \$0 | | \$3,508 |
| 1661309902 | REC FLUOR TROFFER PARABOLIC 2X4' W 2 32W T8
3" DEEP, 12-CELL | | | | | 0.00 EA | |
| Unit values | 1.51 | 110.00 | 41.50 | 0.00 | 0.00 | | 151.50 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | | \$0 |
| 1661309903 | REC FLUOR TROFFER PARABOLIC 2X4' W 3 32W T8
3" DEEP, 18-CELL | | | | | 0.00 EA | |
| Unit values | 1.60 | 142.00 | 44.00 | 0.00 | 0.00 | | 186.00 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | | \$0 |
| 1661309904 | REC FLUOR TROFFER PARABOLIC 2X4' W 4 32W T8
3" DEEP, 32-CELL | | | | | 0.00 EA | |
| Unit values | 1.70 | 159.00 | 47.00 | 0.00 | 0.00 | | 206.00 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | | \$0 |
| 1661309905 | REC FLUOR TROFFER PARABOLIC 1X4' W 2 32W T8
3" DEEP, 9-CELL | | | | | 0.00 EA | |
| Unit values | 1.40 | 92.00 | 38.50 | 0.00 | 0.00 | | 130.50 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | | \$0 |
| 1661309906 | REC FLUOR TROFFER PARABOLIC 1X4' W 1 32W T8
3" DEEP, 9-CELL | | | | | 3.00 EA | |
| Unit values | 1.40 | 88.00 | 38.50 | 0.00 | 0.00 | | 126.50 |
| Totals | 4.21 | \$264 | \$116 | \$0 | \$0 | | \$380 |
| 1661309907 | REC FLUOR TROFFER PARABOLIC 2X4' W 2 32W T8
3" DEEP, 12-CELL, REFLECTOR | | | | | 990.00 EA | |
| Unit values | 1.51 | 133.50 | 41.50 | 0.00 | 0.00 | | 175.00 |
| Totals | 1494.90 | \$132,165 | \$41,085 | \$0 | \$0 | | \$173,250 |
| 1661309908 | REC FLUOR TROFFER PARABOLIC 2X4' W 3 32W T8
3" DEEP, 18-CELL, REFLECTOR | | | | | 0.00 EA | |
| Unit values | 1.60 | 164.30 | 44.00 | 0.00 | 0.00 | | 208.30 |

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Means Data for Lotus

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| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | \$0 |
|-------------|---|-----------|----------|------|------|-----------|
| 1661309909 | SUP/WALL FLUOR 1X4' W 2 32W T8 | | | | | |
| Unit values | 1.14 | \$6.00 | \$31.50 | 0.00 | 0.00 | 117.50 |
| Totals | 0.00 | \$0 | \$0 | \$0 | \$0 | \$0 |
| 1661309910 | INDUSTRIAL FLUOR 1X4' W 2 32W T8
TWO-PIECE REFLECTOR | | | | | |
| Unit values | 1.14 | \$0.00 | \$31.50 | 0.00 | 0.00 | 121.50 |
| Totals | 283.86 | \$22,410 | \$7,844 | \$0 | \$0 | \$30,254 |
| 1661309921 | STRIP FLUOR 1X4' W 2 32W T8 | | | | | |
| Unit values | 1.14 | \$5.00 | \$31.50 | 0.00 | 0.00 | \$6.50 |
| Totals | 52.44 | \$2,530 | \$1,449 | \$0 | \$0 | \$3,979 |
| 1661309933 | SUR/WALL VANITY FLUOR 1X2' W 2 17W T6 | | | | | |
| Unit values | 1.14 | \$8.00 | \$31.50 | 0.00 | 0.00 | 109.50 |
| Totals | 38.76 | \$2,652 | \$1,071 | \$0 | \$0 | \$3,723 |
| 1661309998 | SUR FLUOR TROFFER PARABOLIC 1X4' W 1 32W T8
3" DEEP, 9-CELL, REFLECTOR | | | | | |
| Unit values | 1.40 | \$135.75 | \$38.50 | 0.00 | 0.00 | 174.25 |
| Totals | 11.23 | \$1,086 | \$308 | \$0 | \$0 | \$1,394 |
| 1661309999 | REC FLUOR TROFFER PARABOLIC 1X4' W 1 32W T8
3" DEEP, 9-CELL, REFLECTOR | | | | | |
| Unit values | 1.40 | \$100.75 | \$38.50 | 0.00 | 0.00 | 139.25 |
| Totals | 1771.85 | \$127,147 | \$48,587 | \$0 | \$0 | \$175,734 |

28-Jul-94

MeansData for Lotus

Page

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|-------------|----------|-------------|------------|-----------|-----|-----------|
| U16 ELECTRICAL | | 3800 | \$290,876 | \$104,370 | \$0 | \$0 | \$395,246 |
| ESTIMATE TOTAL | | 4909 | \$290,876 | \$134,852 | \$0 | \$0 | \$425,728 |
| SALES TAX | 5.00% | | \$14,544 | | | | |
| MATL MARKUP | -40.00% | | (\$116,350) | | | | |
| LABOR MARKUP | -13.40% | | | (\$18,070) | | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | | \$189,069 | \$116,782 | \$0 | \$0 | \$305,851 |
| CONTINGENCY | 10.00% | | | | | | \$30,585 |
| BOND | 2.50% | | | | | | \$7,646 |
| PROFIT | 10.00% | | | | | | \$30,585 |
| JOB TOTAL | | | | | | | \$374,668 |

28-Jul-94

MeansData for Lotus

Page

Estimate: Lighting-opt.4 Date: 12 July 1994
 Description: Hospital
 Project: Lighting Study Bid Date:
 Location: Ft. Campbell Job #:
 Sq. footage: City Indx:

SUMMARY

| | Manhours | Matl | Labor | Equipment | Sub | Total |
|-------------------------|----------|-------------|------------|-----------|-----|-----------|
| U02 SITEWORK | 1109 | \$0 | \$30,482 | \$0 | \$0 | \$30,482 |
| U16 ELFCTRICAL | 1800 | \$290,876 | \$104,370 | \$0 | \$0 | \$395,246 |
| TOTAL | 4909 | \$290,876 | \$134,852 | \$0 | \$0 | \$425,728 |
| SALES TAX | 5.00% | \$14,544 | | | | |
| MATL MARKUP | -40.00% | (\$116,330) | | | | |
| LABOR MARKUP | -13.40% | | (\$18,070) | | | |
| EQUIPT MARKUP | 0.00% | | | \$0 | | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$189,069 | \$116,782 | \$0 | \$0 | \$305,851 |
| CONTINGENCY | 10.00% | | | | | \$30,585 |
| BOND | 2.50% | | | | | \$7,546 |
| PROFIT | 10.00% | | | | | \$30,585 |
| JOB TOTAL | | | | | | \$374,668 |

LIFE CYCLE COST ANALYSIS SUMMARY
 ENERGY CONSERVATION INVESTMENT PROGRAM (ECIP) STUDY: E002H03
 INSTALLATION & LOCATION: FORT CAMPBELL REGION NOS. 4 LCCID 1.080
 PROJECT NO. & TITLE: E002H03P LIGHTING CONTROLS @ HOSPITAL CENSUS: 3
 FISCAL YEAR 94 DISCRETE PORTION NAME: LIGHTING
 ANALYSIS DATE: 09-14-94 ECONOMIC LIFE 15 YEARS PREPARED BY: J. HOLLI

581

1. INVESTMENT
 A. CONSTRUCTION COST \$ 10789.
 B. SITE \$ 540.
 C. DESIGN COST \$ 540.
 D. TOTAL COST (1A+1B+1C) \$ 11869.
 E. SALVAGE VALUE OF EXISTING EQUIPMENT \$ 0.
 F. PUBLIC UTILITY COMPANY REBATE \$ 0.
 G. TOTAL INVESTMENT (1D - 1E - 1F) \$ 11869.

2. ENERGY SAVINGS (+) / COST (-)
 DATE OF MASTER 85-3273-X USED FOR DISCOUNT FACTORS OCT 1993

| FUEL | UNIT COST
\$/MBTU(1) | SAVINGS
MBTU/YR (2) | ANNUAL \$
SAVINGS(3) | DISCOUNT
FACTOR(4) | DISCOUNT
SAVINGS |
|-------------------|-------------------------|------------------------|-------------------------|-----------------------|---------------------|
| A. ELECT | \$ 0.18 | 584. | \$ 3609. | 12.43 | \$ 44 |
| B. DIST | \$.00 | 0. | \$ 0. | 13.56 | \$ |
| C. RESID | \$.00 | 0. | \$ 0. | 15.09 | \$ |
| D. NAT G | \$.00 | 0. | \$ 0. | 15.86 | \$ |
| E. COAL | \$.00 | 0. | \$ 0. | 13.61 | \$ |
| F. LPS | \$.00 | 0. | \$ 0. | 12.64 | \$ |
| H. DEMAND SAVINGS | | | \$ 0. | 11.85 | \$ |
| N. TOTAL | | 584. | \$ 3609. | | \$ 44 |

3. NON ENERGY SAVINGS(+) / COST(-)

A. ANNUAL RECURRING (+/-)
 (1) DISCOUNT FACTOR (TABLE A) 11.85
 (2) DISCOUNTED SAVINGS/COST (3A X 3A1) \$

B. NON RECURRING SAVINGS(+) / COSTS(-)

| ITEM | SAVINGS(+) /
COST(-)
(1) | YR
OC
(2) | DISCNT
FACTOR
(3) | DISCOUNTED
SAVINGS(+) /
COST(-) (4) |
|----------|--------------------------------|-----------------|-------------------------|---|
| d. TOTAL | \$ 0. | | | 0. |

C. TOTAL NON ENERGY DISCOUNTED SAVINGS(+) / COST(-) (3A2+3Bd4) \$

4. FIRST YEAR DOLLAR SAVINGS (2N3+3A+13Bd1 / (YRS ECONOMIC LIFE)) \$ 3
 5. SIMPLE PAYBACK PERIOD (13/4) 3.29
 6. TOTAL NET DISCOUNTED SAVINGS (2N5-10) \$ 44
 7. SAVINGS TO INVESTMENT RATIO (SIR)=(5 / 10) = 3.78
 (IF < 1 PROJECT DOES NOT QUALIFY)
 8. ADJUSTED INTERNAL RATE OF RETURN (AIRR): 12.66

ZOO 2: LIGHTING CONTROLS
19 AUGUST 1994

TOCCIP/ANCY SENSOR SAVINGS AFTER LIGHTING RETROFIT

| ELECTRIC COSTS | |
|----------------|-----------------|
| ENERG.Y CHARGE | \$0.0211 PER KW |
| DEMAND CHARGE | \$11.78 PER KW |

BUILDING 8.
AREA
630. HOSPITAL
F LAB WORKING & CAPICES

WATTAGE CONTROLLED:
23.83A W 2 IV=1.10-84
CROSS OF PEAK

CURRENT LEADERS AFTER PROPOSED RE-TRAINING

24 7
ISRAEL
PALESTINE

REVISÉD USAGE:
A 1970-4
1970-4

| | |
|---------|-----|
| 37.10T | KWH |
| 133.074 | WJ |
| 23.84 | KW |

ECO ENERGY CONSUMPTION

| | |
|---------|--------|
| 209,240 | 6-7-76 |
| 743,990 | 8-1-76 |
| 211,828 | 8-1-76 |

83.016 NR
80 NR

NET DEMAND SAVINGS

615,821 M. 57R
384 M. 57R

NET ENERGY SAVINGS
NET ENERGY SAVINGS

PAGE

27-Jul-94

MeansData for Lotus

Pa

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*****
Estimate:  Hospital-Control  Date:    12 July 1994
Description:  Hospital
Project:     Lighting Study   Bid Date:
Location:    Ft. Campbell     Job #:
Sq. footage: City index:
*****
  
```

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|----------------|----------------------------------|----------|---------|---------|-----------|------|---------|
| 1662301000 | OCCUPANCY SENSORS | | | | | | |
| | PASSIVE INFRARED, MANUAL OFF SW. | | | | | | |
| Unit values | | 0.50 | \$0.00 | 13.75 | 0.00 | 0.00 | 73.7 |
| Totals | | 70.00 | \$8.400 | \$1,925 | \$0 | \$0 | \$10,32 |
| U16 ELECTRICAL | | 70 | \$8.400 | \$1,925 | \$0 | \$0 | \$10,32 |

PAGE .

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27-021-94

Memorandum for Lotus

Fa

| Line # | Description | Manhours | Matl | Labor | Equipment | Sub | Total |
|--------|-------------|----------|------|-------|-----------|-----|-------|
|--------|-------------|----------|------|-------|-----------|-----|-------|

| | | | | | | |
|-------------------------|---------|---------|---------|---------|-----|---------|
| ESTIMATE TOTAL | 70 | \$6,400 | \$1,920 | \$0 | \$0 | \$10,32 |
| SALES TAX | 5.00% | | \$420 | | | |
| MATL MARKUP | -20.00% | | \$1,680 | | | |
| LABOR MARKUP | -13.40% | | | \$1,551 | | |
| EQUIPT MARKUP | 0.00% | | | | \$0 | |
| SUB MARKUP | 0.00% | | | | \$0 | |
| TOTAL BEFORE CONTINGENC | | \$7,140 | \$1,667 | \$0 | \$0 | \$8,80 |
| CONTINGENCY | 10.00% | | | | | \$88 |
| BOND | 2.50% | | | | | \$22 |
| PROFIT | 10.00% | | | | | \$58 |
| JOB TOTAL | | | | | | \$10,78 |

PACI

27-Jul-94

MeansData for Lotus

Page

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=====
Estimate: Hospital-Contntrl Date: 12 July 1994
Description: Hospital
Project: Lighting Study Bid Date:
Location: Ft. Campbell Job #:
Sq. footage: City Indx:
=====

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SUMMARY

```

=====
Manhours Matl Labor Equipment Sub Total
=====
Ulf ELECTRICAL 70 $8,400 $1,925 $0 $0 $10,325
TOTAL 70 $8,400 $1,925 $0 $0 $10,325

SALES TAX 5.00% $420
MATL MARKUP -20.00% ($1,680)
LABOR MARKUP -13.40% ($258)
EQUIPT MARKUP 0.00% $0
SUB MARKUP 0.00% $0

TOTAL BEFORE CONTINGENC $7,140 $1,667 $0 $0 $8,807
CONTINGENCY 10.00% $880
BOND 2.50% $220
PROFIT 10.00% $880

JOB TOTAL $10,787

```




MOTOROLA

Electronic Ballast

3 LAMPS
INPUT:
120 VOLTS AC 50 Hz

MOTOROLA

Electronic Ballast

MODEL NO. M-100

3 LAMPS

INPUT: 120 VOLTS AC 50 Hz

OUTPUT: 200-250V AC 50 Hz

HIGH-PERFORMANCE ELECTRONIC BALLAST

FLUORESCENT 1, 2, 3 and 4 LAMP
RAPID START

PAGE 5

Total Customer Satisfaction



Total Customer Satisfaction

CUSTOMER SUPPORT 1-800-MLI-0089

HIGH PERFORMANCE FEATURES

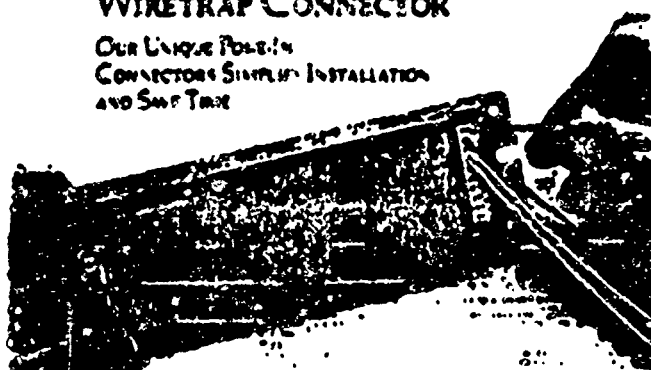
| | |
|---------------------------|---|
| Power Factor | Greater than 99 |
| Total Harmonic Distortion | Less than 10% |
| Third Harmonic Distortion | Less than 5% |
| Lamp Current Crest Factor | Less than 1.5 |
| Lamp Current Frequency | Greater than 25 KHz |
| Lamp Configuration | Series |
| Lamp Phasing | Less than 2%, Not Visible |
| Sound Rating | Class A |
| Product Life | 20 years plus |
| Connector | Poke-in wire trap for 18 gauge (solid wire) |
| Life span | 1.2 '85 |
| EMF | Meets FCC Part 18, Subpart C |

CODES

| | |
|----------------------|---|
| UL Listed | Class P |
| Transient Protection | Meets ANSI C6241, Cat. A (Formerly IEEE M7) |

WIRETRAP CONNECTOR

Our Unique Pole-In
Connectors Simplify Installation
and Save Time



PART NUMBER DESCRIPTION

| Model Number | Explanation | Notes |
|--------------|-------------|-------|
| M | Motorola | |
| 1 | 18 gauge | |
| 2 | 20 gauge | |
| 3 | 22 gauge | |
| 4 | 24 gauge | |
| 5 | 26 gauge | |
| 6 | 28 gauge | |
| 7 | 30 gauge | |
| 8 | 32 gauge | |
| 9 | 34 gauge | |
| 10 | 36 gauge | |
| 11 | 38 gauge | |
| 12 | 40 gauge | |
| 13 | 42 gauge | |
| 14 | 44 gauge | |
| 15 | 46 gauge | |
| 16 | 48 gauge | |
| 17 | 50 gauge | |
| 18 | 52 gauge | |
| 19 | 54 gauge | |
| 20 | 56 gauge | |
| 21 | 58 gauge | |
| 22 | 60 gauge | |
| 23 | 62 gauge | |
| 24 | 64 gauge | |
| 25 | 66 gauge | |
| 26 | 68 gauge | |
| 27 | 70 gauge | |
| 28 | 72 gauge | |
| 29 | 74 gauge | |
| 30 | 76 gauge | |
| 31 | 78 gauge | |
| 32 | 80 gauge | |
| 33 | 82 gauge | |
| 34 | 84 gauge | |
| 35 | 86 gauge | |
| 36 | 88 gauge | |
| 37 | 90 gauge | |
| 38 | 92 gauge | |
| 39 | 94 gauge | |
| 40 | 96 gauge | |
| 41 | 98 gauge | |
| 42 | 100 gauge | |
| 43 | 102 gauge | |
| 44 | 104 gauge | |
| 45 | 106 gauge | |
| 46 | 108 gauge | |
| 47 | 110 gauge | |
| 48 | 112 gauge | |
| 49 | 114 gauge | |
| 50 | 116 gauge | |
| 51 | 118 gauge | |
| 52 | 120 gauge | |

QUALITY

Motorola's goal of acceptable quality is at Six Sigma or no more than 3.4 defects per million opportunities. Motorola Lighting Inc. designed its electronic ballast to meet the most rigorous performance standards at world class levels. This translates into a highly robust product that goes through extensive environmental stress testing to assure our customers of very low initial defect levels (less than 0.3%) and high reliability (greater than 500,000 hours Mean Time to Failure—MTTF).

The economic ballast life is 20 years when operated at 45°C ambient temperature. Operation of MLI's ballast at 50°C may derate life expectancy by 25%.

Six Sigma Quality means "world class" in all that we do at Motorola Lighting Inc., which is part of our commitment to TOTAL CUSTOMER SATISFACTION.



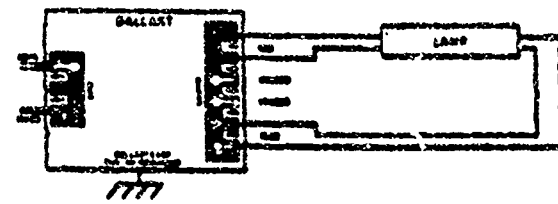
RAPID START BALLASTS

| Lamp Type | Rated Lamp Voltage (V) | Lamp Length (FT) | Model No. | Line Voltage (V) | Max Line Current (A) | Typical Line Current (A) | Typical Input Power (W) | Min Starting Temp (°F) |
|-------------------|------------------------|------------------|-------------------|------------------|----------------------|--------------------------|-------------------------|------------------------|
| 1 LAMP T8 | | | | | | | | |
| P32T8 | 32 | 4 | M1 RM T8 ILL 120 | 120 | .31 | .26 | 29 | 50° |
| P32T8 | 32 | 4 | M1 RM T8 ILL 277 | 277 | .13 | .11 | 29 | 50° |
| P25T8 | 25 | 3 | M1 RM T8 ILL 120 | 120 | .24 | .19 | 23 | 50° |
| P25T8 | 25 | 3 | M1 RM T8 ILL 277 | 277 | .10 | .08 | 23 | 50° |
| P17T8 | 17 | 2 | M1 RM T8 ILL 120 | 120 | .17 | .13 | 15 | 50° |
| P17T8 | 17 | 2 | M1 RM T8 ILL 277 | 277 | .07 | .06 | 15 | 50° |
| 2 LAMP T8 | | | | | | | | |
| P32T8 | 32 | 4 | M2 RM T8 ILL 120 | 120 | .55 | .31 | 91 | 50° |
| P32T8 | 32 | 4 | M2 RM T8 ILL 277 | 277 | .24 | .21 | 91 | 50° |
| P25T8 | 25 | 3 | M2 RM T8 ILL 120 | 120 | .42 | .40 | 48 | 50° |
| P25T8 | 25 | 3 | M2 RM T8 ILL 277 | 277 | .18 | .17 | 48 | 50° |
| P17T8 | 17 | 2 | M2 RM T8 ILL 120 | 120 | .27 | .24 | 30 | 50° |
| P17T8 | 17 | 2 | M2 RM T8 ILL 277 | 277 | .13 | .10 | 31 | 50° |
| 2 LAMP T12 | | | | | | | | |
| P40T12 | 40 | 6 | M3 RM T12 ILL 120 | 120 | .84 | .59 | 71 | 50° |
| P40T12 | 40 | 6 | M3 RM T12 ILL 277 | 277 | .37 | .35 | 60 | 50° |
| P34T12 | 34 | 6 | M3 RM T12 ILL 120 | 120 | .54 | .50 | 60 | 50° |
| P34T12 | 34 | 6 | M3 RM T12 ILL 277 | 277 | .23 | .21 | 60 | 50° |
| P40T10 | 40 | 6 | M3 RM T12 ILL 120 | 120 | .84 | .60 | 71 | 50° |
| P40T10 | 40 | 6 | M3 RM T12 ILL 277 | 277 | .37 | .35 | 60 | 50° |
| P34T10 | 34 | 6 | M3 RM T12 ILL 120 | 120 | .54 | .50 | 60 | 50° |
| P34T10 | 34 | 6 | M3 RM T12 ILL 277 | 277 | .23 | .21 | 60 | 50° |
| P30T12 | 30 | 5 | M3 RM T12 ILL 120 | 120 | .60 | .37 | 44 | 50° |
| P30T12 | 30 | 5 | M3 RM T12 ILL 277 | 277 | .17 | .15 | 43 | 50° |
| 3 LAMP T8 | | | | | | | | |
| P32T8 | 32 | 4 | M3 RM T8 ILL 120 | 120 | .78 | .78 | 60 | 50° |
| P32T8 | 32 | 4 | M3 RM T8 ILL 277 | 277 | .33 | .32 | 60 | 50° |
| P25T8 | 25 | 3 | M3 RM T8 ILL 120 | 120 | .61 | .60 | 60 | 50° |
| P25T8 | 25 | 3 | M3 RM T8 ILL 277 | 277 | .28 | .28 | 60 | 50° |
| P17T8 | 17 | 2 | M3 RM T8 ILL 120 | 120 | .39 | .38 | 44 | 50° |
| P17T8 | 17 | 2 | M3 RM T8 ILL 277 | 277 | .18 | .18 | 44 | 50° |
| 3 LAMP T12 | | | | | | | | |
| P40T12 | 40 | 6 | M3 RM T12 ILL 120 | 120 | .92 | .80 | 107 | 50° |
| P40T12 | 40 | 6 | M3 RM T12 ILL 277 | 277 | .48 | .36 | 107 | 50° |
| P34T12 | 34 | 6 | M3 RM T12 ILL 120 | 120 | .84 | .77 | 91 | 50° |
| P34T12 | 34 | 6 | M3 RM T12 ILL 277 | 277 | .41 | .33 | 91 | 50° |
| P40T10 | 40 | 6 | M3 RM T12 ILL 120 | 120 | .92 | .80 | 107 | 50° |
| P40T10 | 40 | 6 | M3 RM T12 ILL 277 | 277 | .48 | .36 | 107 | 50° |
| P34T10 | 34 | 6 | M3 RM T12 ILL 120 | 120 | .84 | .77 | 91 | 50° |
| P34T10 | 34 | 6 | M3 RM T12 ILL 277 | 277 | .41 | .33 | 91 | 50° |
| P30T12 | 30 | 5 | M3 RM T12 ILL 120 | 120 | .78 | .67 | 80 | 50° |
| P30T12 | 30 | 5 | M3 RM T12 ILL 277 | 277 | .37 | .30 | 73 | 50° |
| P30T10 | 30 | 5 | M3 RM T12 ILL 120 | 120 | .78 | .67 | 80 | 50° |
| P30T10 | 30 | 5 | M3 RM T12 ILL 277 | 277 | .37 | .30 | 73 | 50° |
| 4 LAMP T8 | | | | | | | | |
| P32T8 | 32 | 4 | M4 RM T8 ILL 120 | 120 | 1.05 | .83 | 121 | 50° |
| P32T8 | 32 | 4 | M4 RM T8 ILL 277 | 277 | .44 | .43 | 110 | 50° |
| P25T8 | 25 | 3 | M4 RM T8 ILL 120 | 120 | .81 | .80 | 61 | 50° |
| P25T8 | 25 | 3 | M4 RM T8 ILL 277 | 277 | .36 | .34 | 60 | 50° |
| P17T8 | 17 | 2 | M4 RM T8 ILL 120 | 120 | .55 | .48 | 44 | 50° |
| P17T8 | 17 | 2 | M4 RM T8 ILL 277 | 277 | .23 | .19 | 44 | 50° |

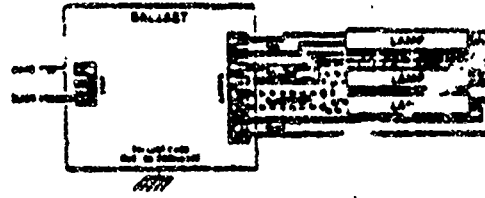
Consult with Distributor for Shadow Equipment for the above lamps. Test Data from Manufacturer. Test and Available on Request from Factory.

WIRING DIAGRAMS AND BALLAST DIMENSIONS

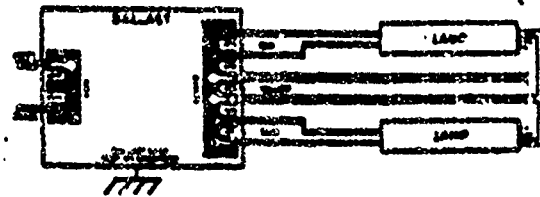
WIRING DIAGRAMS



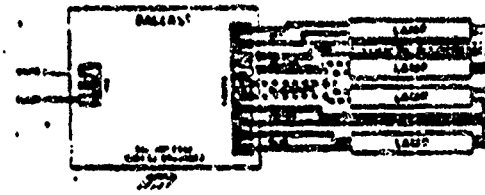
1 LAMP



3 LAMP

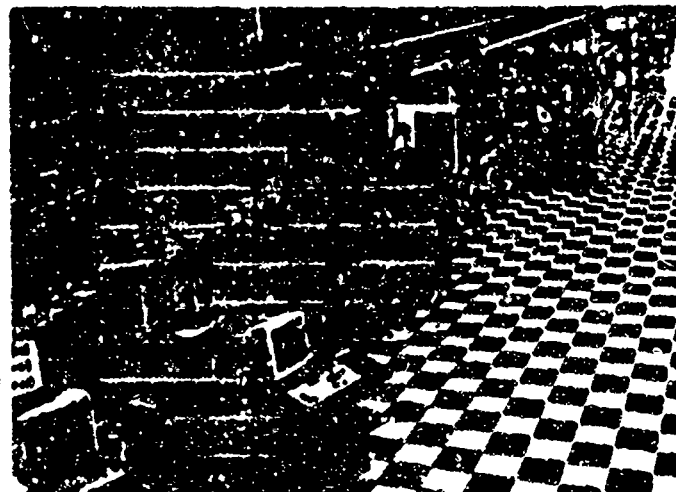
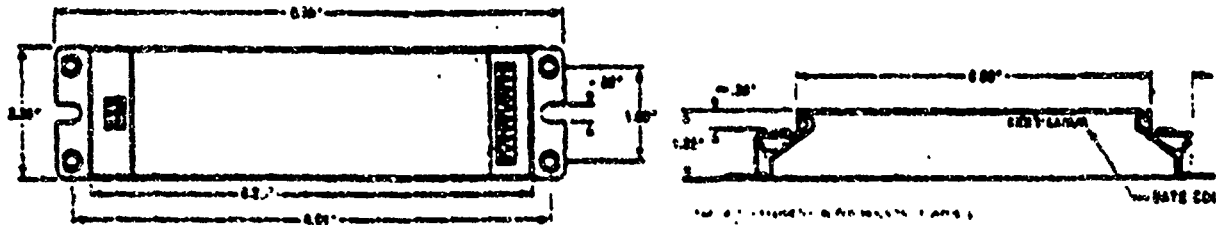


2 LAMP



4 LAMP

BALLAST DIMENSIONS*



Our custom-tailored manufacturing facility in Raleigh, North Carolina, U.S.A.



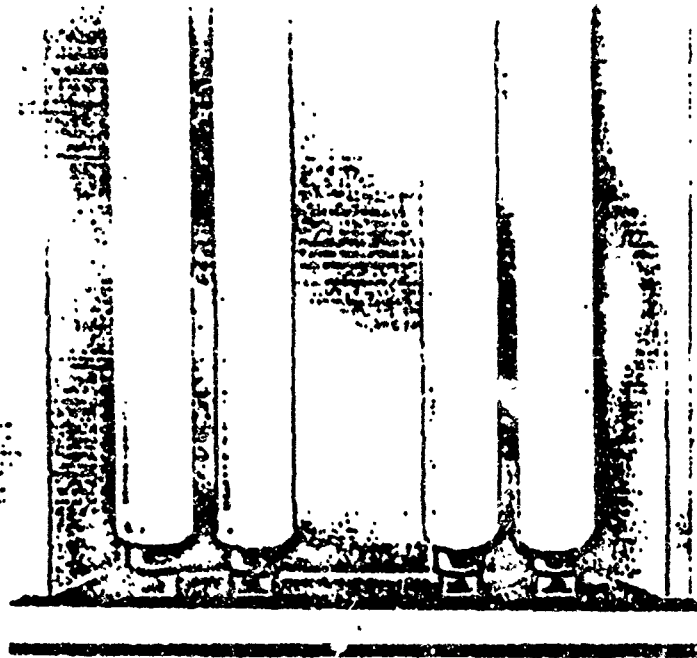
MOTOROLA
Lighting Inc.

817 Commerce Parkway
Bellaire, Texas 77401
1-800-461-3030

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for maximum energy efficiency and
long life.

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Minority and female employees are encouraged to apply.

300,000,000



**SILVERLUX™
REFLECTORS
CUT YOUR
LIGHTING ENERGY
COSTS IN HALF**

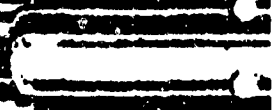
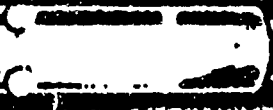


[illegible]

| DATE | DESCRIPTION | AMOUNT | BALANCE |
|----------|-----------------|--------|---------|
| 1-1-58 | OPENING BALANCE | | 100.00 |
| 1-15-58 | PAYROLL | 50.00 | 150.00 |
| 2-1-58 | RECEIVED | 200.00 | 350.00 |
| 2-15-58 | PAYROLL | 50.00 | 400.00 |
| 3-1-58 | RECEIVED | 150.00 | 550.00 |
| 3-15-58 | PAYROLL | 50.00 | 600.00 |
| 4-1-58 | RECEIVED | 100.00 | 700.00 |
| 4-15-58 | PAYROLL | 50.00 | 750.00 |
| 5-1-58 | RECEIVED | 150.00 | 900.00 |
| 5-15-58 | PAYROLL | 50.00 | 950.00 |
| 6-1-58 | RECEIVED | 100.00 | 1050.00 |
| 6-15-58 | PAYROLL | 50.00 | 1100.00 |
| 7-1-58 | RECEIVED | 150.00 | 1250.00 |
| 7-15-58 | PAYROLL | 50.00 | 1300.00 |
| 8-1-58 | RECEIVED | 100.00 | 1400.00 |
| 8-15-58 | PAYROLL | 50.00 | 1450.00 |
| 9-1-58 | RECEIVED | 150.00 | 1600.00 |
| 9-15-58 | PAYROLL | 50.00 | 1650.00 |
| 10-1-58 | RECEIVED | 100.00 | 1750.00 |
| 10-15-58 | PAYROLL | 50.00 | 1800.00 |
| 11-1-58 | RECEIVED | 150.00 | 1950.00 |
| 11-15-58 | PAYROLL | 50.00 | 2000.00 |
| 12-1-58 | RECEIVED | 100.00 | 2100.00 |
| 12-15-58 | PAYROLL | 50.00 | 2150.00 |
| 1-1-59 | RECEIVED | 150.00 | 2300.00 |
| 1-15-59 | PAYROLL | 50.00 | 2350.00 |
| 2-1-59 | RECEIVED | 100.00 | 2450.00 |
| 2-15-59 | PAYROLL | 50.00 | 2500.00 |
| 3-1-59 | RECEIVED | 150.00 | 2650.00 |
| 3-15-59 | PAYROLL | 50.00 | 2700.00 |
| 4-1-59 | RECEIVED | 100.00 | 2800.00 |
| 4-15-59 | PAYROLL | 50.00 | 2850.00 |
| 5-1-59 | RECEIVED | 150.00 | 3000.00 |
| 5-15-59 | PAYROLL | 50.00 | 3050.00 |
| 6-1-59 | RECEIVED | 100.00 | 3150.00 |
| 6-15-59 | PAYROLL | 50.00 | 3200.00 |
| 7-1-59 | RECEIVED | 150.00 | 3350.00 |
| 7-15-59 | PAYROLL | 50.00 | 3400.00 |
| 8-1-59 | RECEIVED | 100.00 | 3500.00 |
| 8-15-59 | PAYROLL | 50.00 | 3550.00 |
| 9-1-59 | RECEIVED | 150.00 | 3700.00 |
| 9-15-59 | PAYROLL | 50.00 | 3750.00 |
| 10-1-59 | RECEIVED | 100.00 | 3850.00 |
| 10-15-59 | PAYROLL | 50.00 | 3900.00 |
| 11-1-59 | RECEIVED | 150.00 | 4050.00 |
| 11-15-59 | PAYROLL | 50.00 | 4100.00 |
| 12-1-59 | RECEIVED | 100.00 | 4200.00 |
| 12-15-59 | PAYROLL | 50.00 | 4250.00 |
| 1-1-60 | RECEIVED | 150.00 | 4400.00 |
| 1-15-60 | PAYROLL | 50.00 | 4450.00 |
| 2-1-60 | RECEIVED | 100.00 | 4550.00 |
| 2-15-60 | PAYROLL | 50.00 | 4600.00 |
| 3-1-60 | RECEIVED | 150.00 | 4750.00 |
| 3-15-60 | PAYROLL | 50.00 | 4800.00 |
| 4-1-60 | RECEIVED | 100.00 | 4900.00 |
| 4-15-60 | PAYROLL | 50.00 | 4950.00 |
| 5-1-60 | RECEIVED | 150.00 | 5100.00 |
| 5-15-60 | PAYROLL | 50.00 | 5150.00 |
| 6-1-60 | RECEIVED | 100.00 | 5250.00 |
| 6-15-60 | PAYROLL | 50.00 | 5300.00 |
| 7-1-60 | RECEIVED | 150.00 | 5450.00 |
| 7-15-60 | PAYROLL | 50.00 | 5500.00 |
| 8-1-60 | RECEIVED | 100.00 | 5600.00 |
| 8-15-60 | PAYROLL | 50.00 | 5650.00 |
| 9-1-60 | RECEIVED | 150.00 | 5800.00 |
| 9-15-60 | PAYROLL | 50.00 | 5850.00 |
| 10-1-60 | RECEIVED | 100.00 | 5950.00 |
| 10-15-60 | PAYROLL | 50.00 | 6000.00 |
| 11-1-60 | RECEIVED | 150.00 | 6150.00 |
| 11-15-60 | PAYROLL | 50.00 | 6200.00 |
| 12-1-60 | RECEIVED | 100.00 | 6300.00 |
| 12-15-60 | PAYROLL | 50.00 | 6350.00 |
| 1-1-61 | RECEIVED | 150.00 | 6500.00 |
| 1-15-61 | PAYROLL | 50.00 | 6550.00 |
| 2-1-61 | RECEIVED | 100.00 | 6650.00 |
| 2-15-61 | PAYROLL | 50.00 | 6700.00 |
| 3-1-61 | RECEIVED | 150.00 | 6850.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| | 二 | 三 | 四 | 五 | 六 | 七 | 八 | 九 | 十 | 十一 | 十二 | 十三 | 十四 | 十五 | 十六 | 十七 | 十八 | 十九 | 二十 | 二十一 | 二十二 | 二十三 | 二十四 | 二十五 | 二十六 | 二十七 | 二十八 | 二十九 | 三十 | 三十一 | 三十二 | 三十三 | 三十四 | 三十五 | 三十六 | 三十七 | 三十八 | 三十九 | 四十 | 四十一 | 四十二 | 四十三 | 四十四 | 四十五 | 四十六 | 四十七 | 四十八 | 四十九 | 五十 | 五十一 | 五十二 | 五十三 | 五十四 | 五十五 | 五十六 | 五十七 | 五十八 | 五十九 | 六十 | 六十一 | 六十二 | 六十三 | 六十四 | 六十五 | 六十六 | 六十七 | 六十八 | 六十九 | 七十 | 七十一 | 七十二 | 七十三 | 七十四 | 七十五 | 七十六 | 七十七 | 七十八 | 七十九 | 八十 | 八十一 | 八十二 | 八十三 | 八十四 | 八十五 | 八十六 | 八十七 | 八十八 | 八十九 | 九十 | 九十一 | 九十二 | 九十三 | 九十四 | 九十五 | 九十六 | 九十七 | 九十八 | 九十九 | 一百 |
|--|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|

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SILVERLUX FLUORESCENT REFLECTORS

- Cut energy costs in half or enhance lighting levels
- Pay for themselves in two years or less
- Install and maintain easily
- Warranted for 5 years
- Attractive low-rate financing available
- Available from nationwide dealer network

For more information just call.

3M is a part of the Green Light Program—a voluntary, non-regulatory program organized by the Environmental Protection Agency (EPA). This program encourages corporations to take advantage of new lighting technologies and design practices that benefit the environment. 3M is a unique member of the program because it participates as both a consumer of electrical lighting energy and as a developer of electrical lighting products. Silverlux reflectors demonstrate 3M's commitment to energy-efficient lighting technologies that reduce energy consumption and pollution while delivering the same or better lighting.

Just costs, not lighting.

Innovation working for you

3M Construction Markets
3M Center Bldg 225-45-09
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612-736-2386


PAGE 5

Evenlite LED Exit Lights EV SERIES

The LED of the 21st Century



No Ifs, Ands or Buts.

This is exactly how the EVENLITE 2000 appears! Perfectly even illumination is produced by indirect lighting, so that the LED's are invisible, with no hot spots. All this is provided in the slimmest sign on the market with integral charger and battery.

No competitor comes close to these combined specifications:

- Less than 3 watts total power per face
- Perfect light distribution across face
- Single face only 1 1/4" thick
- Double face only 3 1/4" thick
- Remote unit only 1/2" thick
- Multiple LED lamps with 20 year unconditional guarantee
- NICAD batteries with 5 year guarantee
- Aluminum housing for light weight and strength
- Universal mount
- Baked enamel, vinyl clad or satin anodized finishes
- Polycarbonate faceplate

Patent Pending

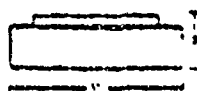


SHIELD SOURCE INCORPORATED
320 VFW Avenue, Grasonville, Maryland 21638
Tel: (410) 827-6023 Fax: (410) 827-6387

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PIONEER

1011 Series
Economy!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

| MODEL# | WATTAGE | L | D |
|---------|---------------------|-----|----|
| PI 1011 | 113, 220, 2X113 | 11" | 7" |
| PI 1014 | 2X113, 2X113, 2X113 | 14" | 7" |

ECLIPSE

8012 Series
New!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

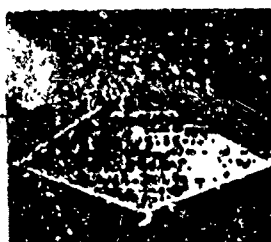
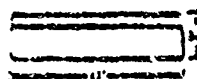
OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

| MODEL# | WATTAGE | L | D |
|---------|---------------------|-----|-------|
| EC 8012 | 113, 220, 2X113 | 12" | 4.75" |
| EC 8015 | 2X113, 2X113, 2X113 | 15" | 4.75" |

DISCOVERY

3011 Series
Traditional Square!



UL Listed

STANDARD FEATURES

- White translucent acrylic lens.
- White enamel finished steel pan.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.
- Theft proof screws.

| MODEL# | WATTAGE | L | D |
|---------|---------------------|-----|-------|
| DS 3011 | 113, 220, 2X113 | 11" | 3.25" |
| DS 3014 | 2X113, 2X113, 2X113 | 14" | 3.25" |

EXPLORER

010 Series
Low Profile!



UL List

STANDARD FEATURES

- White vandal resistant lexan lens.
- Black lexan housing.
- 120 volt class "P" ballast.
- White powder coated reflector.
- Lamp(s) included.

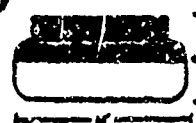
OPTIONS

- High power factor ballast.
- 277 volt ballast.
- White lexan housing.

| MODEL# | WATTAGE | L | D |
|--------|-----------------|-----|------|
| EP 010 | 113, 220, 2X113 | 11" | 3.5" |

LUTO

1303 Series
Handball!



UL List

STANDARD FEATURES

- White heavy gauged lexan lens.
- Corrosion-proof lexan base.
- White powder coated reflector.
- Lamp(s) included.
- 120 volt class "P" ballast.

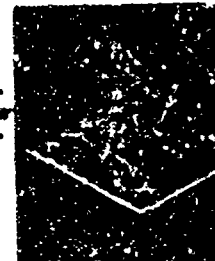
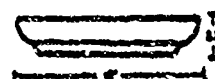
OPTIONS

- High power factor ballast.
- 277 volt ballast.

| MODEL# | WATTAGE | L | D |
|---------|-----------------|-----|-------|
| PL 1303 | 113, 220, 2X113 | 10" | 4.25" |

COSMO

400 Series
Low Profile!



UL List

STANDARD FEATURES

- White lexan lens.
- White vandal-proof lexan lens.
- 120 volt class "P" ballast.
- Lamp(s) included.

OPTIONS

- High power factor ballast.
- 277 volt ballast.

| MODEL# | WATTAGE | L | D |
|--------|-----------------|-----|-------|
| CS 400 | 113, 220, 2X113 | 11" | 3.25" |

INCON INDUSTRIES

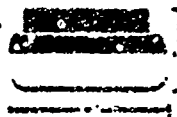
PAGE 3-1



UL Listed

ARMSTRONG

100 Series
Kindel-Lite



STANDARD FEATURES

- White heavy gauged lexan lens
- Corrosion-proof lexan base
- 120 volt class "T" ballast
- Lamp(s) included

OPTIONS

- High power factor ballast
- 277 volt ballast

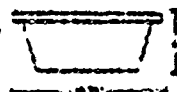
| MODEL | WATTAGE | L | D |
|--------|---------|-----|--------|
| ARM100 | 100 | 10" | 4 1/2" |



UL Listed

CENTURY

100 Series
Kindel-Lite



STANDARD FEATURES

- White extra strong lexan lens
- White enamel finished steel pan
- 120 volt class "T" ballast
- Lamp(s) included

OPTIONS

- High power factor ballast
- 277 volt ballast
- Theft proof screws

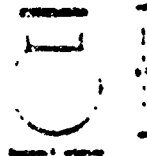
| MODEL | WATTAGE | L | D |
|-------|---------|---------|----|
| CE100 | 100 | 11 1/2" | 4" |



UL Listed

HALO

303 Series
Economy



STANDARD FEATURES

- Durable polycarbonate base
- Available in white or black
- White 6" acrylic globe
- 120 volt class "T" ballast
- Lamp included

OPTIONS

- Clear polycarbonate jar
- White acrylic jar
- 110" module

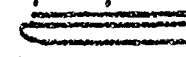
| MODEL | WATTAGE | L | D |
|-------|---------|---------|----|
| HA303 | 30 | 10 1/2" | 6" |
| HA303 | 30 | 10 1/2" | 6" |
| HA303 | 30 | 10 1/2" | 6" |



UL Listed

STRATUS

2011 Series
Low Profile Superior



STANDARD FEATURES

- White translucent acrylic lens
- White enamel finished steel pan
- 120 volt class "T" ballast
- Lamp(s) included

OPTIONS

- High power factor ballast
- 277 volt ballast
- Theft proof screws

| MODEL | WATTAGE | L | D |
|--------|---------|---------|-----|
| ST2011 | 100 | 10 1/2" | 11" |
| ST2011 | 100 | 10 1/2" | 14" |



UL Listed

NOVA

300 Series
Kindel-Lite



STANDARD FEATURES

- Opal polycarbonate diff
- White corrosion-proof base
- White powder coated reflector
- 120 volt class "T" ballast
- Lamp(s) included

OPTIONS

- Black or white cage
- Black lexan housing
- Theft proof screws

| MODEL | WATTAGE | L |
|-------|---------|-----|
| NO300 | 30 | 10" |



UL Listed

KENNEDY

100 Series
Kindel-Lite



STANDARD FEATURES

- Brushed satin cast alum housing
- Durable white lexan jar
- 120 volt class "T" ballast
- Lamp included

OPTIONS

- Clear polycarbonate jar
- 6" round globe
- High power factor ballast
- Pull chain

| MODEL | WATTAGE | L |
|-------|---------|--------|
| KY100 | 100 | 8 1/2" |
| KY100 | 100 | 8 1/2" |

INCON INDUSTRIES

Switchomat™

The world's best investment in
automatic light switching
....with a 6-year proven track record!

\$50.00 invested now will earn a \$500 to \$1,400 return by 1999.



Model SOM-500

Automatic wall switch replacement
for private offices, conference rooms,
restrooms, etc. Takes only minutes
to install utilizing the existing wires.

Turns the lights on
automatically when you
enter....and off after
you leave.



Model SOM-1000

Automatic wall switch replacement
for large rooms and classrooms. Takes
only minutes to install utilizing the
existing wires.

Special Features

- Manual lights off switch • Built-in safety neon night light
- Shortened recycle time delay during installation
- Convenient visible logic key bypass provision in the unlikely event of sensor failure • Vandal resistant design

Ultrasafe

The **Switchomat™** is equipped with a metal safety shield in compliance with the highest fire rating standards. Unit is automatically grounded for safety when mounted on an existing metal switch box.



- Universal Energy Control, Inc. is able to offer smaller sized, esthetic, moderately priced devices because of our exclusive patent #4,876,962.
- Universal Energy Control, Inc. does not use ungrounded, potentially dangerous, bulky heat sinks, triacs or other costly trouble prone components.
- Universal Energy Control, Inc. devices provide superior operating capabilities and switching even with electronic ballast. A 72 day money back guarantee and 3 to 5 years warranty.

PAC

Energy conservation is a terrific investment

Normally all lights are turned on at 8 A.M. and not turned off until 8 P.M. by the custodians. The lights are on a total of 12 hours a day. Based on actual tests and evaluations, most people only occupy their private offices for 4 hours a day and the remainder are spent attending meetings, appointments, lunch, etc. Consequently, daily wasted energy consumption is 8 hours in an office or meeting room equipped with 8 fluorescent lamps at 40 watts each the total electrical load is 376 watts in 4 hours. Then using *Switchomat*™ the lights are turned off automatically when the last person leaves the room and will save the following:

$$\begin{aligned} \text{Daily cost savings: } 8 \text{ Hours} \times 376 \text{ watts} &= 3 \text{ KWH} \times 8c = 24c \\ \text{Weekly cost savings: } 5 \times 24 &= \$1.20 \quad \text{Yearly cost savings: } 52 \times \$1.20 = \$62.40 \end{aligned}$$

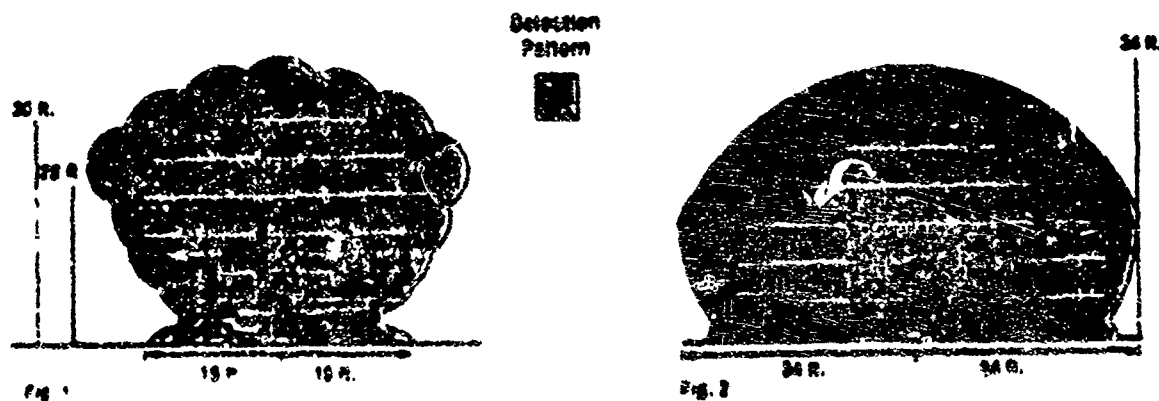
Yearly savings are conservatively calculated since no holidays or vacations are considered. During these periods even energy is wasted. In addition, cooling costs are reduced when the lights are off.

THEORY OF OPERATION A *Switchomat*™ passive infrared detector device reacts to the infrared heat rays transmitted by the human body and is a passive non-radiating device.

AESTHETIC FEATURES Facility managers and engineers recognize the real value of installing money-saving feature buildings. The *Switchomat*™ adds prestige and convenience in addition to its contemporary appearance.

DEPENDABILITY You can depend on Unesco's electrical manufacturing and design methods. The *Switchomat*™ proven electrical circuitry. No heat is generated as in other electronic switching devices and therefore complaints or queries from occupants are eliminated. Patent # 4,874,862.

UNIVERSAL ENERGY INC. is a leader in infrared and ultrasonic occupancy sensors to control light and HVAC in large rooms. Unesco Inc. the parent company has been manufacturing over 1,000,000 occupancy sensing detection devices since 1971 for the security industry.



SOA 100-A

- Operates incandescent fluorescent fixtures
- 100W Ballast 120 VAC 60Hz 60W incandescent
- 100W Ballast or 277 VAC 60Hz 1/2 HP
- Manual light switch or light sensor
- Color Body Size 3" x 3" x 12" Weight 10lb
- Power consumption 100 watts
- See Fig. 1 for detection pattern

SOA 100-A-2

- 2 sensors with manual or light switches
- Operates incandescent, fluorescent fixtures
- 100W Ballast 120 VAC 60Hz 60W incandescent each eye
- 100W Ballast or 277 VAC 60Hz 1/2 HP each eye
- 2 Manual light switch
- Color Body Size 3" x 3" x 12" Weight 7 lbs
- Power consumption 100 watts
- See Fig. 2 for detection pattern

SOA 100-B

- Operates incandescent fluorescent fixtures
- 100W Ballast 120 VAC 60Hz 60W incandescent
- 100W Ballast or 277 VAC 60Hz 1/2 HP
- Manual light switch or light sensor
- Color Body Size 3" x 3" x 12" Weight 10lb
- Power consumption 100 watts
- See Fig. 2 for detection pattern

SOA 100-B-2

- Operates incandescent fluorescent fixtures
- Maximum 60W each to Maximum 240W each at 120V
- Maximum 100W each to Maximum 400W each at 277V
- Manual light switch
- Color Body Size 3" x 3" x 12" Weight 10 lbs
- Power consumption 100 watts
- See Fig. 2 for detection pattern

PAGE 1

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